The

British Medical Journal

The Journal of the British Medical Association.

INCLUDING AN EPITOME OF CURRENT MEDICAL LITERATURE.

WITH SUPPLEMENT.

No. 3090. SATURDAY, MARCH 20, 1920. **Price 1/-**

J. & A. CHURCHILL'S NEW BOOKS.

EDEN & LOCKYER'S GYNÆCOLOGY. 2nd Ed. 24 Col. Plates, 513 Text-figures. 30s. net, post 9d.
STARLING'S PRINCIPLES OF PHYSIOLOGY. 3rd. Ed. 579 Illustratrations. 25s. net, post 9d.
PRINCIPLES OF ANATOMY AS SEEN IN THE HAND. By. F. WOOD JONES, D.Sc., M.B., B.S. 2 Plates, 123 Text-figures. 15s. net, post 6d.
MANUAL OF OBSTETRICS. By. O. ST. JOHN MOSES, M.D., F.R.C.S. 136 Ills. 21s. net, post 6d.
SIGHT TESTING MADE EASY. By. W. W. HARDWICKE, M.D., M.R.C.P. 4th Ed. 12 Illustrations. 5s. net, postage 3d.

London: 7, Great Marlborough Street, W. 1.

MILITARY PHYSICAL ORTHOPÆDICS.

G.S.W. of Nerves.

A Treatise on the After-Treatment of Wounded and particularly on the Use of Artificial Muscles in Paralyses.

"A valuable little book.....in particular is the author's long quadriceps strap, a very valuable addition to the armamentarium of the orthopædic surgeon."—LANCET, July 12th, 1919.

"A concise and invaluable guide on physical treatment of deformities..... illustrations well chosen, well executed, and numerous.....should be in the hands of every practitioner, apart from the specialist."—N.Z. MED. JOURNAL, April, 1919.

Price 6s.

Obtainable at the Office of the High Commissioner for New Zealand, 415, Strand, London, W.C.2.

OXFORD MEDICAL PUBLICATIONS

READY SHORTLY.

MANUAL OF VENEREAL DISEASES FOR STUDENTS.

By L. W. HARRISON, D.S.O., M.B., Ch.B., M.R.C.P.E., Brevet-Colonel R.A.M.C. and K.H.P. (Ret.); Director of Venereal Department, St. Thomas's Hospital.

Crown 8vo. Cloth. 376 pages. With 64 Illustrations in the Text and 21 Plates, 16 of which are in Colour.

SYMPATHETIC NERVOUS SYSTEM IN DISEASE.

By W. LANGDON BROWN, M.A., M.D., (Cantab.), F.R.C.P. (Lond.), Physician with charge of Out-Patients, St. Bartholomew's Hospital; Physician to the Metropolitan Hospital, &c.

Demy 8vo. Cloth. Illustrated.

HENRY FROWDE AND HODDER & STOUGHTON, 17, Warwick Sq., Newgate Street, London, E.C. 4.

REGISTERED AS A NEWSPAPER.]

JUST ISSUED
NEW (4TH) EDITION

DaCOSTA'S PHYSICAL DIAGNOSIS

See SAUNDERS' Advertisement on Page 5.

Second Edition, Enlarged. Crown 8vo, 7s. 6d. net.
With 31 Original Photographs and 150 Special Prescriptions.

TREATMENT OF

DISEASES OF THE SKIN.

By KNOWSLEY SIBLEY, M.D.Camb.,
London: EDWARD ARNOLD, 41 & 43, Maddox St. W.

By R. T. WILLIAMSON, M.D., F.R.C.P.,
Consulting Physician to the Manchester Royal Infirmary.

DIETS AND ARTICLES OF FOOD SUITABLE for DIABETIC PATIENTS.

JUST PUBLISHED. Price 2/6.
Messrs. SHERRATT & HUGHES, 34, Cross Street, Manchester

DISEASES OF THE SPINAL CORD.

2ND IMPRESSION, 1911. With 182 Original Illustrations and 7 Plates. Price 15/-.
Messrs. FROWDE, HODDER & STOUGHTON, Warwick Square, London, E.C.

NOW READY. SIXTH EDITION.
Thoroughly Revised, Reset, and Enlarged to Demy Octavo. Pp. x + 1080. Price 25s. net.

WHITLA'S DICTIONARY OF TREATMENT,

INCLUDING MEDICAL AND SURGICAL THERAPEUTICS.

BAILLIÈRE, TINDALL & COX,
8, Henrietta Street, Covent Garden, London, W.C. 2.

NOTICE.

All Advertisements *re* Vacancies, Assistants, Practices and Partnerships, etc., must in future reach this Office, 429, Strand, W.C. 2, by TUESDAY, to ensure insertion in the current week's issue of the Journal.

[COPYRIGHT]

By BEDFORD FENWICK, M.D.,
Senior Gynæcologist to The Hospital for Women, Soho Square.

UTERINE FIBROIDS, AND OVARIAN DISEASE.

SECOND EDITION.

With Analysis of 600 gynæcological laparotomies.

"Dr. Fenwick's results are remarkably good."—THE LANCET.

Price 3s. 6d. post free.

BAILE, SONS & DANIELSSON, LTD.,
86, Great Titchfield Street, W.

By FREDERICK W. PRICE, M.D., F.R.S.(Edin.),
Physician to the Great Northern Central Hospital. Assistant Physician to the National Hospital for Diseases of the Heart, London.

DISEASES OF THE HEART.

Their Diagnosis, Prognosis, and Treatment by Modern Methods.

With a Chapter on the Electro-Cardiograph.

Demy 8vo, 484 pp. Very fully Illustrated. 21s. net

Lancet.—"By great care, and by the use of an amazing amount of material, he has accomplished what many readers have been waiting for, giving us a complete account of the diagnosis, prognosis, and treatment of heart diseases by modern methods in association with all the invaluable teaching bequeathed to us by the older masters of clinical observation."

British Medical Journal.—"The book presents a comprehensive account of modern knowledge of cardiology."

Edinburgh Medical Journal.—"Taken as a whole the book is, from the practitioner's standpoint, one of the best of the many monographs on the heart that has appeared in recent years."

Dublin Medical Journal.—"It is probably destined to take the place in the library of the present day physician that was occupied some twenty or more years ago by Sir W. Broadbent's well-known work."

Midland Medical Review.—"It is impossible to enumerate the many excellencies of this book."

London:
HENRY FROWDE AND HODDER & STOUGHTON.

By Lt.-Col. Sir WILLIAM I. DE C. WHEELER, M.D., F.R.C.S.I., Surgeon, Mercer's Hospital, Dublin, and Member of Council, R.C.S.I.

HANDBOOK OF OPERATIVE SURGERY.

3rd EDITION. 4th THOUSAND.
Price 10s. 6d. net.
With an Introduction by
Lieut.-General Sir ALFRED KEOGH, G.C.B.

BAILLIÈRE, TINDALL AND COX, 8, Henrietta Street, London, W.C. 2.

[ISSUED WEEKLY

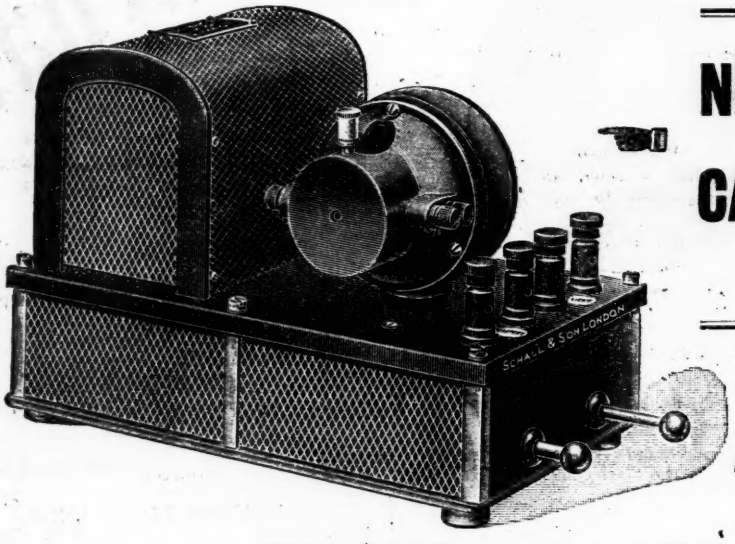
SCHALL & SON

(W. E. SCHALL, B.Sc. Lond.)

ESTABLISHED 1887

The oldest established firm devoted solely to Electro-medical and X-ray Apparatus.

BRITISH PROPRIETARY **BRITISH CAPITAL**



THE ILLUSTRATION SHOWS A

NEW TRANSFORMER FOR CAUTERY AND LIGHT

to be operated from the continuous current mains.

PARTICULARS ON REQUEST.

THE "PANTOSTAT"
(EARTH FREE UNIVERSAL APPARATUS)
AND
ALL OTHER TYPES OF ELECTRO-MEDICAL AND X-RAY APPARATUS.

Manufactured throughout in our Works on the Premises—

71/75, NEW CAVENDISH STREET, LONDON, W.1.

A large Illustrated Catalogue will be sent free to any Medical Man desiring it.

WHITE & WRIGHT,

Surgical Instrument Manufacturers.

(CONTRACTORS TO THE WAR OFFICE)

SURGICAL INSTRUMENTS—
A thoroughly comprehensive and varied selection always in stock.

HOSPITAL EQUIPMENT—
Operation Tables. Instrument Cabinets. Ward Lockers.
Instrument Tables. High Pressure Steam Sterilizers.

INVALID FURNITURE—
Wheel Chairs. Bed Tables. Back Rests. Carrying Chairs.

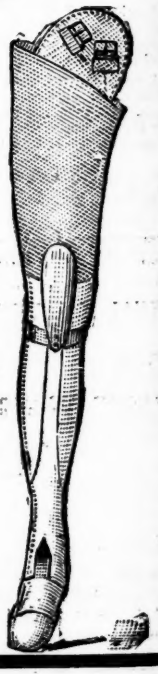
Extensive Showrooms on first floor.

Water Beds. Air Cushions. Hot Water Bottles.
Elastic Stockings. Kneecaps.
Surgical Supporting Belts. *Ladies' Attendant on Premises.*
Trusses.

ARTIFICIAL LIMBS.

Instep Arch Supports for Flat Foot.

Every Nursing Requisite kept in Stock. *Ground floor Fitting Rooms.*
Clinical Thermometers. Surgical Dressings. Ward Thermometers.



Repairs promptly attended to. Works adjoining Premises.

93, Renshaw St., LIVERPOOL.

Telephone: Royal 2213. Telegrams: "Surgical."

Observations
ON
THE ELEMENTS OF THE PSYCHO-NEUROSES.

A PAPER ADDRESSED TO THE SOCIETY OF MEDICAL OFFICERS OF THE PENSIONS BOARD, LANCASTER GATE, LONDON.

BY HENRY HEAD, M.D., F.R.S.

IT would be an impertinence on my part to talk to you of the treatment of war pensioners, for each of you is more practised than I am in this class of work. But I venture to approach you to-day because I believe your experience will be of inestimable advantage in the more difficult task of understanding the psycho-neuroses of civilian life.

The conditions which evoked these morbid states in soldiers on active service were essentially simple. A man who had never engaged in any warlike or strenuous pursuit was called upon to undergo violent preparation under most unpleasant conditions to fit him to take part in disagreeable and dangerous operations calculated to arouse fear even in the bravest. The fundamental instincts of civilized man were outraged. What wonder that the not infrequent consequences were an anxiety neurosis, an obsessional state, or hysterical manifestations?

Now the war is over, the factors responsible for the continuance of these morbid states have altered. The active forces are still fear and a desire to avoid discomfort, but the objective of these emotions is changed. The patient has no longer to brave the horrors of the trenches, but the conscientious pensioner is still oppressed by dread that he may be unable to face his job, whilst the more obviously self-seeking recognizes that he is better off on a pension of a pound a week than when earning twice that sum by fatiguing toil. The first of these suffers from an anxiety neurosis, whilst the second remains firmly entrenched behind his hysterical symptoms.

No new morbid phenomena have been evoked by the war. The disordered functions of the human mind were manifested in exactly the same forms as under the stress and strain of peace-time civilization. But the task to be faced by every man in the army was a simple one. The one test of his conduct was "Can he fight?" and the only reality to which he was compelled to adapt himself was a state of war. On the other hand, in civilian life the factors underlying a psycho-neurosis are far more complex; they may lie in many different fields—thwarted ambition, business worry, or family anxieties, apart altogether from the disaccord between individual sexual desires and social convention.

In all attempts to solve a complicated problem it is important to choose examples which show the smallest number of variable factors. The functional neuroses of war have been of inestimable benefit in showing us these morbid states under the simplest causal conditions. We have been able to observe the various forms they assume under pressure of the same external forces, and could watch the diverse results which followed changes in the mental and physical environment.

Your task is to deal with these patients, who continue to need your care although the war is over, and you have the opportunity of watching their behaviour, when subjected to the more complicated conditions of civilian life. You can note the effect of disappointment on anxiety neurosis, originally due to fear and fatigue, or observe the return of obsessions and nightmares under the depressing effect of illness of wife or child. Let us then consider some of the chief processes at work in the production of the psycho-neuroses in the hope that we may be guided to some simple rules of prophylaxis and curative treatment.

In the past, psychology dealt mainly with the intellectual factors of mental activity; the instinctive and emotional aspects of the mind were disregarded and the unconscious entirely neglected. But we have learnt to recognize that, outside the limits of the experiences which can be recalled into consciousness by an effort of the will, lie impressions capable of producing an active effect upon mental life.

Throughout the vital activities of the nervous system, from the lowest reflexes to the highest neuro-psychical activities, functions of a lower order are controlled by those higher in the scale. Thus, for example, the activity of the optic thalamus is normally controlled by that of the cerebral cortex. The thalamus is the centre for the more affective aspects of sensation; it is peculiarly associated with the pleasure or discomfort induced by afferent impulses, and is responsible for almost the whole of our sensibility to pain. When this centre is released from cortical control, the patient becomes more susceptible on the affected half of his body to any stimulus capable of exciting either pleasant or unpleasant sensations. The prick of a pin causes intense discomfort and immediate withdrawal, whilst contact with such a stimulus as warmth evokes exquisite pleasure. Moreover, general states of emotion can be produced more easily by stimuli applied to the abnormal parts; thus, an elderly man, one of my patients, fell in love on the affected half of his body, and had no desire to touch the beloved object, except with his affected hand. Gross organic disease may free the activities of the optic thalamus from the active control normally exerted over them by the cortex. The response from the affected parts becomes in consequence more vehement and impulsive. The patient can no longer deliberate whether or no to remove his hand when pricked; the reaction is an immediate defensive withdrawal.

The object of this control, exercised by higher centres over those of a more primitive activity, is to endow the animal with the power of choice between alternative courses. It can be demonstrated at every level of neural activity, from the simplest reflexes to the highest neuro-psychical functions. It consists, on the part of the higher centre, of a positive exercise of inhibiting energy over the reactions of those lower in the neural hierarchy. With the gradual evolution of its functions, the nervous system thus gains ever-increasing control over the reaction to painful and disagreeable stimuli. We acquire the power of choosing our actions, and cease to be the slaves to an impulsive and inevitable response.

From the psychical point of view, the reactions which civilized man must bring under control are those founded on the primitive instincts; of these, the most powerful are the pleasure of sexual gratification and the urgent desire to avoid pain and discomfort. They are therefore controlled by the more discriminative and logical aspects of the mind, exactly as the activity of the thalamus is subjected to that of the cortex. So long as there is harmony the mind exercises its functions in an orderly manner. The instincts are permitted to manifest themselves in an orderly manner on suitable occasions, and at other times are relegated to a subservient position. But any want of unison between the more impulsive and more discriminative activities of the mind becomes manifested in mental conflict.

Normal control is an automatic and not a voluntary act. The focus of interest changes, as attention moves over the varied objects presented to consciousness. Some point in the field arouses vivid mental activity, and then becomes submerged again with all its attendant psychical processes, as attention moves on to some other centre of interest. In order that the mind can function in a normal manner, attention must be free to range widely, and within certain limits we must be able to choose the mode of response.

Should this control cease to be automatic, the mind adopts several different methods of curbing the desires to which it has determined not to yield. Of all instincts, that of self-preservation is the most deeply innate; but the war has shown how completely it may be curbed by the forces of social tradition or implanted *esprit de corps*. A soldier recalls to himself that if he runs away he will certainly be shot at dawn, and dominates an instinctive wish by a terrifying concept. But this intermediate conflict is certain sooner or later to lead to morbid consequences. The private develops a conversion hysteria, and is carried from the danger zone paralysed from the waist downwards. The officer becomes the victim of an anxiety neurosis, and may resolve the conflict by suicide.

Such conflict may assume morbid proportions in several different ways. It may be that an attempt has been made by the sufferer to repress the desire it is inexpedient to gratify, and the emotional energy with which it is charged reappears in some other form, most commonly as a disturbance of some physiological function. Or the affective intensity of the experience may be so great that the normal powers of adaptation are inadequate to resist its impact.

Lastly, the patient may fall back on some previous and less efficient mode of reaction.

REPRESSION.

The importance of the mental conflict arising from the failure of automatic control was not recognized until Freud formulated his conception of the process of repression, and its bearing on the genesis of the psycho-neuroses. He laid down that forgetting was not a negative procedure, but was a positive act. Unpleasant experiences did not simply fade away, but were thrust out of consciousness as incompatible with its more intellectual content.

These instinctive desires or unpleasant impressions pass into oblivion in consequence of the positive inhibition exerted by the dominating influence of conscious activities of the mind, but are still capable of exerting a subterranean influence on the mental and physical life of the individual. It is this act of expulsion without facing the problem that is so dangerous to the harmonious working of the mind. If I have received an unpleasant letter and neglect to answer it because I am reluctant to deal with its contents, I may forget it for a time; but I shall probably be haunted by a sense of impending ill, my appetite may fail and sleep be troubled. For I have thrust into unconsciousness a highly affective process, which should have led to action, without discharging the energy with which it was loaded. This energy, forbidden the normal method of expression, finds some other outlet. It appears as a dyspepsia, headache, insomnia, or analogous disturbances of function. It is a significant fact that this suppressed energy often manifests itself on the physiological level when denied psychical expression.

This repression, under the influence of reluctance to face disagreeable memories, reaches its acme in the cases of amnesia, which were not uncommon during the war. Many patients could not remember that they had ever been in France, and one young officer under my care could recollect nothing after his seventeenth year. He lost all knowledge of his profession as an engineer, and knew nothing of music in which he had become unusually expert. An able pilot in the R.A.F., when returned to duty after a crash, was ignorant of the construction of an aeroplane, and denied that he had ever been in the air. Asked why he was wearing wings on his tunic, he was entirely at a loss to explain how they came to be there.

DEFECTIVE ADAPTATION.

It is a beneficent provision of Nature that a stimulus of uniform intensity cannot continue to produce a reaction of constant strength. Adaptation is one of the fundamental factors in the mode of response of the nervous system to the forces of the external world. Soak the right hand for a time in cold and the left in warm water; then plunge both of them into a vessel containing water at a temperature which, before the experiment, seemed neither hot nor cold—the neutral medium will now seem hot to the right hand and cold to the left. Each has become adapted to the temperature to which it was exposed, and the change is manifested in the different sensation produced in the two hands by the same, previously neutral, environment.

One of the most salutary results of this power of adaptation possessed by the central nervous system is the capacity to dominate pain and discomfort. This applies not only to the normal physiological processes of the individual, but also to those of his mental life. An apparently overwhelming sorrow loses its poignancy with time; a sound mind and healthy body become adapted to the environment. But any failure of physical health, or lack of that instinctive vital energy which lies behind the processes of consciousness may lead to failure of adaptation. The patient becomes easily fatigued, anxious, and depressed, finally passing into a condition spoken of by the old physicians as "irritable weakness." Should sleep be disturbed this process of exhaustion—physical and mental—is aggravated. The power of adaptation to the conditions produced by bodily fatigue or psychical discomfort is diminished, and the patient is said to be suffering from an exhaustion psycho-neurosis.

But some minds have a subtle method of side-tracking this want of adaptation by constructing fantastic conceptions of the external world. No better example could be given than the story of Cinderella. The despised youngest sister, sitting in rags amongst the pots and pans of the kitchen, imagines a coach and six horses, a footman and gorgeous robes; she too is present at the ball, but she alone attracts the attention of the Prince. Such fantasies have been the comfort of many a Cinderella, and have served to make it possible to exist under otherwise impossible surroundings.

Such fantasy building has its dangers. Just as a repressed fear may come to the surface as a physical symptom, so such imaginings that have no connexion with reality may lead to curious aberrations of conduct. Privates masquerade as officers of high rank. A lieutenant, who was brought to me for an opinion about loss of power in his arm, was covered with ribbons of non-existent orders, one of which was said to be the "Serbian Victoria Cross." No one doubted his story that he had penetrated to Austrian head quarters disguised as an Austrian officer and had obtained information of vast importance; and yet it was easy to ascertain that this young cockney could not understand a word of German.

I believe that this fantastic method of thinking is responsible for some of the inexplicable disappearances known as "*fugues*." A lieutenant in the R.F.A. was wounded in France, but the injury was not severe. Whilst in hospital in England he obtained leave to spend a week-end with his parents. On Sunday afternoon he mounted his motor bicycle prepared to return to hospital, and disappeared. He subsequently confessed that during the ride he began to think with pleasure of the farm where he worked before the war; from that time he had only a hazy recollection of what happened, until he was discovered by his brother three weeks later. It appears that he turned up at the farm on Monday morning, occupied his old quarters, and set to work at once. When after some days the surprised farmer asked how long he intended to stop, he said he had been discharged from the army.

An airman who had returned from France was attached to an aerodrome to fly machines he particularly disliked. He was lunching alone in the neighbouring town at a restaurant where some of his colleagues were entertaining a merry party. He began to think how pleasant it would be to be free, and what a happy time he had spent with a friend and his wife who kept an hotel in the West of England. He went to the station feeling lonely and unhappy, intending to return to the aerodrome. A train came in going to the West; he got in and disappeared. Several weeks later he returned without explanation, having spent the whole time quietly with his friends. He had made no attempt to hide himself, nor had he offered any reason to his hosts for his presence.

These "*fugues*" are commonly attributed to amnesia, and the patient is said to remember nothing that happened. This is true in some instances; but I am certain that there are others in which memory is not completely lost, and sometimes a fairly coherent account can be obtained from the patient himself of how he spent his time. He may lose all sense of the cogency of the reasons against the line of conduct he adopts; but, as in the case of the airman just mentioned, he may not only remember the mental conflict, but also be able to give an account of his period of absence. Such fantasy building was responsible for many inexplicable aberrations of conduct in young officers during the war. It also lies at the bottom of some of those curious cases met with in civilian life, when a woman for a time leads a purely fantastic existence.

REGRESSION.

When Jung first described regression he intended the term to signify a falling back of psychical life to a more infantile or primitive mode of behaviour. This useful conception is, however, capable of far wider application.

An unexpected return to some previous habit is one of the commonest errors in all human mechanical activities. Innumerable instances can be gathered from games and from daily life. For example, an aviator slowly acquires complete facility in manipulating his machine. At first he laboriously flies by rule, and has to memorize the steps by which each evolution is induced. As he becomes more expert, he has but to desire some movement and it occurs; for a good pilot flies automatically and not by formula.

This power over the machine has been gained by conscious effort, during which a series of functional adaptations become engulfed in the automatic activities of the central nervous system. Movements laboriously learnt become unconscious reactions. But this supreme control can only be maintained by constant exercise and perfect

physiological efficiency. Any influence which tends to diminish the power of concentration, or to disturb the acquired mastery over sensory and motor impulses, will lower ability to fly. The pilot begins to be aware that he has lost his certainty in the air, and especially in the art of landing, but does not know why he is no longer master of his actions. In the same way a golf player, who is "off his game," discovers he has fallen back to some long conquered faults. This might be called mechanical regression; for some action, which has been acquired in perfection and become automatic, is executed in a more primitive and less efficient manner. An even more evident regression was responsible for some of the accidents which occurred to pilots flying rapid scouts. They had been trained on relatively stable machines, which, if they fell into a spin, would right themselves, provided the pilot centralized all his controls. But the fighting scouts were not only much more sensitive, but required a definite action to bring them out of a spin. Should the pilot inadvertently regress to his old habits, adapted to more stable machines, he would certainly get into trouble. The attempt to fly a fast scout by the manipulative actions, suitable to a more stable type of machine, ended inevitably in disaster.

Regression may also be manifested in a failure to control automatically impulses from the sense organs. Those of you who happen to have overcome a childish tendency to sea-sickness may have had the ignominious experience of falling back to the earlier mode of reaction, under the influence of some temporary malaise. In the same way, a tendency to giddiness and vomiting in the air passes away with the acquisition of ability to fly. If, however, the pilot's physiological resistance is subsequently lowered, or his power of mental concentration is diminished, he may regress to the form of reaction which troubled him when he first went into the air.

Mental regression is an exactly analogous phenomenon. Most soldiers suffering from the stress of fighting complained of nightmares, which assumed the most diverse and individual forms; after suitable treatment these terrors ceased, and ultimately the sufferer was able to sleep quietly, and undertake some form of light work. But suddenly all the old horrors returned, in consequence of some private anxiety or trouble. He did not dream of the cause of his recent worry: his nightmares were those of the trenches. He had fallen back on an earlier mode of reaction.

When dealing with the psycho-neuroses of airmen, I frequently had the opportunity of seeing all these aspects of regression in the same individual. A clever pilot would discover that he was no longer flying with certainty; he was obliged to think what he was doing, instead of carrying out the manœuvre automatically. At the same time the tendency to become giddy, which he experienced when he first went into the air, began to show signs of returning. He slept badly, and nightmares occurred, which went back to some long-forgotten accident, or to his period of service in the trenches. In such a case regression had occurred in all forms of neuro-psychical activity, and was manifested in want of mechanical aptitude, defective sensory adaptation, and uncontrolled resurgence of unpleasant mental experiences.

Throughout this exposition I have spoken of the psycho-neuroses in terms of processes common both to the mind and to the physiological functions of the nervous system. The lower reflexes are controlled by the higher centres, exactly as the more discriminative aspects of the normal mind dominate those which are more instinctive and primeval. But the success of this relation is based on a harmonious give and take. When I tread on a sharp stone, the result is a complicated act of walking, which removes my whole body from the site of the disagreeable experience; if, however, the sole of my foot is pricked when I am prone in bed, all that is necessary is a simple act of flexion, withdrawing the stimulated limb.

Control, in as far as it is a harmonious automatic process, is an expression of the dominance exercised by higher over lower neuro-psychical activities. Abnormal consequences arise when there is declared conflict between the suppressed experiences and the repressing forces. Such emotional repression of some idea or feeling, on account of the dread or repulsion it excites, uniformly leads to harmful consequences.

Adaptation is the power possessed by the normal nervous system of responding to a stimulus of constant intensity, with a steadily decreasing reaction. If this faculty is diminished, we can no longer accustom ourselves to our surroundings, and fail to carry out automatically the functions necessary for such adaptation. Unpleasant mental experiences, or bodily discomfort, tend to be unduly prolonged and lead to exhaustion.

Regression is the act of falling back to a more primitive mode of reaction. Facilities which have been acquired by practice come to be exercised automatically, as the reactions of the child are transformed by increasing experience into those of the man. Any failure of this automatic control may lead to the phenomenon of regression, and the victim becomes subject to some disability he had previously overcome completely.

Face to face with the patient, it is futile to waste time in considering whether he is a case of neurasthenia, psychasthenia, anxiety neurosis, or hysteria. The war has unfortunately increased the universal love of labels. Medicine is popularly thought to be based on the principles of a penny-in-the-slot machine. Make a so-called "diagnosis" and the rest follows mechanically. Hysteria is treated with electricity and massage; an anxiety neurosis needs a "rest cure"; obsessions require fresh air and cheery companions. Nothing is more pitiful than the condition of the medical man who finds that these rules of practice break under him. He is filled with mingled anger and despair, which frequently lead him to vent his impotence on the patient; he expresses his opinion that "the fellow is a rotter," and he "would like to see all his sort shot on the parade ground." He has made no attempt to investigate the forces at work that produce the condition he does not understand. His "diagnoses" are but camouflaged ignorance. The only diagnosis that is of the slightest value, or is worthy of the dignity of our profession, is the laying bare of the forces which underlie the morbid state and the discovery of the mental experiences which have set them in action. Diagnosis of the psycho-neuroses is an individual investigation; they are not "diseases," but morbid activities of a personality which demand to be understood. The form they assume depends on the mental and physiological life of the patient, his habits, and constitution. That is why the psycho-neuroses of war were so much simpler than are those of civilian life. Moreover, in daily practice, the causes of much defective mental harmony are not only more complex, but are more difficult to elicit. A married woman is not likely to confess to her doctor that she is in love with another man, when the doctor's wife may any day drop in to tea with her. She may have absolute confidence in the discretion of her medical attendant, but the presence of his wife would instinctively remind her of her unpleasant conflict. On the other hand, she has no reluctance to confess what she knows in her heart to be the cause of her want of sleep and digestive troubles to a man living at a distance, whom she will in all probability never see again, after her morbid condition has passed away.

Provided we can determine the processes at work in the production of the psycho-neuroses, the causal factors underlying a large number of the phenomena can be discovered without elaborate technique. In many cases, especially during the war, the patient was conscious of the experience which was at the bottom of his trouble, but, because of the horror it engendered, he refused to face it. This was particularly evident in cases of obsession. A man who had seen some horrible or filthy sight naturally repressed it whenever it appeared in consciousness. In this he was encouraged by his medical attendants, who advised him to "go away and forget the war." "Don't think of anything you saw in France, but play games and be with cheery fellows." The evil of this advice has been wonderfully expressed by Siegfried Sassoon in his poem called "Repression of War Experience."

> Now light the candles; one; two; there's a moth;
> What silly beggars they are to blunder in
> And scorch their wings with glory, liquid flame—
> No, no, not that—it's bad to think of war,
> When thoughts you've gagged all day come back to
> scare you.
> And it's been proved that soldiers don't go mad
> Unless they lose control of ugly thoughts
> That drive them out to jabber among the trees.

If the morbid state is accompanied by physical symptoms, such as loss of speech, deafness, or paralysis, these must be removed. The patient is first carefully examined so as to be certain that there is no structural cause for his loss of power. Then he is told that his disability is not based on any serious bodily condition, and that he can be cured without difficulty.

The majority of hysterical patients, like children, are unduly suggestible. But, in most instances, it is unnecessary to employ hypnotic suggestion. Provided the examination has been carried out carefully and sympathetically and nothing has been said or done to confirm the patient's belief in the severity of his disease, the physician will have acquired sufficient suggestive power to remove such physical disabilities as paralysis or loss of speech. Sometimes this suffices to produce a permanent cure; but it must not be forgotten that behind these obvious manifestations may lie a state of anxiety. This must be dealt with seriously and systematically, or the patient will relapse on the first occasion that his conflict is reawakened.

The number of lightning cures that were possible during the war was a measure of the ignorance of the bulk of the medical profession as to the nature of these maladies. Paralyses of mental origin were mistaken or neglected, and the patient was not subjected to systematic psychical treatment.

All such loss of function can be easily recognized by its character. It follows a conceptual and not a physiological or anatomical distribution. A patient with hysterical loss of speech can write and read fluently, and one with complete aphonia can cough loudly. When all power of recognizing the position of one upper extremity appears to be lost, the patient has no difficulty in finding the tip of his affected forefinger with that of the normal hand; but he carries out the reverse operation with difficulty, because it seems natural to him to do badly with the "bad" hand and well with the "good" one. But, when the sense of position is disturbed from an organic lesion of the cortex, the condition is usually the exact opposite. The normal forefinger cannot be brought into contact with that of the affected hand because its position is not known, whereas the reverse movement can be carried out without difficulty, because the situation of the normal hand is accurately recognized. It is easy to make fair shooting with a bad rifle if we know the position of the target; but the best rifle in the world is useless if we are ignorant of the direction of our aim.

The following difference between two apparently allied signs is equally significant. When a patient with tabes dorsalis or any disturbance of the functions of the posterior columns is made to stand with his eyes closed, he tends to sway or fall. In many psychopathic states he also becomes unsteady under similar conditions; this has been called by the outrageous name of "pseudo-Romberg." But the true nature of this sign is evident from the following procedure: Let the patient stand on both feet and tell him to close his eyes; he tends to fall. Then tell him you are going to examine his eyes; stand him facing the light, and close first one eye with your hand and then the other; he will remain steady on his feet. By the first method of examination, attention was attracted to his power of standing with his eyes closed, but, on the second occasion, he was told that his eyes were under examination and no question of equilibrium arose in his mind. All these conditions may be classed together as "paralysis by idea."

Most of these defects of function arising during the war have long ago been removed by treatment, and the few patients of this class who remain are of a poor mental type. The large bulk of the functional neuroses which now demand attention are those consisting of states of anxiety and obsessions. This corresponds to the normal experience of civilian life. An ex-soldier is troubled about his work or is anxious about the illness of his wife and the difficulty of obtaining a lodging. Officers returning to their pre-war employment find it uninteresting and badly paid. Moreover, they have not the mental stamina to work long hours, and then return home in an intolerably overfilled train. Old nightmares recur and sleep is troubled; their general efficiency goes down, and they are in real danger of finding themselves without employment.

It is the business of the physician to investigate these conditions with the greatest care. An unfavourable environment must, if possible, be changed. The sleep of one of my patients improved enormously as soon as quarters were found for him in London, so that the railway journey at the beginning and end of the day's work became unnecessary. Abnormal mental experiences must be brought into the main stream of the individual personality, and, if possible, the patient must be induced to regard them from a more favourable point of view. A terrifying object, that can be logically examined, tends to lose its fearful aspect. We dread the unknown; and to drag these half-appreciated horrors into the light may discharge the greater part of their emotional energy. If possible, a sorrow must be sublimed; the loss of some dearly loved person should not be repressed, but be brought up to form an integral part of the sacrifice at the altar.

Obsessional states are the hardest to remove permanently; for any want of physiological or mental fitness is liable to lead to regression. If, however, the patient can be taught to recognize the significance of this reappearance, its explosive force can be greatly lessened.

I have entered a plea for regarding the psycho-neuroses as a disturbance of functions, common both to the nervous system and to the mind. The form they assume depends on the personality of the patient, and the nature of the emotions and ideas with which he has had to deal; it has nothing to do directly with the effect of external physical forces. Such expressions as "shell shock" and "neurasthenia" do not correspond categorically to the manifestations of the functional neuroses, which are in reality the forms assumed by the reaction of the patient to his individual mental experiences.

THE NATURE, PREVENTION, AND TREATMENT OF HEAT HYPERPYREXIA.*

THE CLINICAL ASPECT.

BY

W. H. WILLCOX, C.B., C.M.G., M.D., F.R.C.P.,

PHYSICIAN TO ST. MARY'S HOSPITAL, LONDON; LATELY CONSULTING PHYSICIAN TO THE MESOPOTAMIAN EXPEDITIONARY FORCE.

THE three summers of 1916, 1917, and 1918 spent on active service in Mesopotamia as Consulting Physician to the Mesopotamian Expeditionary Force gave me the opportunity of seeing a very large number of cases of illness due to exposure to high atmospheric temperature, and I made a careful study of the clinical manifestations of the different types of disease due to this cause.

Heat hyperpyrexia was the most striking and most dangerous form of illness met with, and as this was likely at any period to occur as a complication in the milder types of these effects of heat, it was chosen as the title of the paper.

ETIOLOGICAL FACTORS.

Climate.

Mesopotamia and the country round the Persian Gulf have been well known for many years as having an unenviable reputation for danger from "heat-stroke." The sun's rays seem to have a peculiar deadly power in this part of the world, and the risk of heat-stroke appears to be much greater than in countries like India, where the temperature is equally high.

Probably the explanation is to be found in the extreme flatness of the country, and the absence of trees and vegetation except in the small cultivated areas. The clearness of the atmosphere also and the absence of dust and moisture in the upper strata undoubtedly contribute, so that the full force of the sun's rays was encountered, with scarcely any absorption from dust or moisture in the air and unrelieved by shade.

The soil of Mesopotamia is really the dried alluvial mud deposited by the river floods, and this forms a light brown dry barren deposit, which radiates and reflects to a great extent the sun's rays, so that one is exposed not only to the direct rays of the sun but to those reflected and radiated from the surrounding soil.

* Papers read in introducing a discussion on heat hyperpyrexia at a meeting of the Medical Society of London on March 8th.

Temperature.

A maximum shade temperature of 110° F. appeared to be the dangerous limit. When this was reached some cases of "effects of heat" were sure to occur, and each degree rise above this limit was attended by an increasingly larger number of cases. Temperatures of 120° or over were exceedingly dangerous, and on these days, in spite of all precautions, large numbers of heat-stroke cases occurred.

A comparison of the temperature records of 1917 and 1918 for Baghdad (see atmospheric temperature curves) shows the reason of the far greater number of cases of heat-stroke in the former year. In 1917, on six days in July the shade temperature was 120° and upwards, and on fifteen days it was 115° and over. In 1918 the temperature did not reach 118°, and on only two occasions was it 115° or over.

The curves showing the temperature and cases due to effects of heat illustrate the influence of temperature.

Cumulative Effect of Heat.—The effect of heat was undoubtedly cumulative in action; thus one or two very hot days were not necessarily followed by a large number of cases of heat-stroke; it was the succession of several hot days which was dangerous. The case incidence curve followed the temperature curve, with a delay of a few days in the rise of the former. The cumulative effect of heat was shown on the individual; a man might be exposed to heat for one or more days and then develop an attack of heat hyperpyrexia in the night or early morning after the atmospheric temperature had fallen considerably.

Humidity of atmosphere undoubtedly predisposed to heat hyperpyrexia, owing to the diminished heat loss from a lower rate of evaporation from the skin, and also from the greater heat conductivity of a hot, damp atmosphere. The effect of a high relative humidity was shown by the greater case incidence of effects of heat at Basrah than at Baghdad (see tables), the relative humidity being considerably higher at Basrah, as shown by the wet and dry bulb records.

Effects of Heat in Mesopotamia (British).

	1917.		1918.	
	Cases.	Deaths.	Cases.	Deaths.
January and February ...	—	—	—	—
March	61	—	2	—
April	612	1	10	—
May	390	—	68	1=1.4%
June	307	7= 2.2%	121	—
July	2,949	425=14.4%	189	10= 5.2%
August	1,086	63= 5.8%	147	17=11.5%
September	810	27= 3.3%	24	3=12.5%
October	18	1= 5.5%	12	—
November	9	—	1	—
December	—	—	—	—
Total	6,242	524=8.4%	574	31=5.4%

Effects of Heat in Mesopotamia (Indian).

	1917.		1918.	
	Cases.	Deaths.	Cases.	Deaths.
January, February, and March	—	—	—	—
April	15	—	5	—
May	6	1=23.3%	11	4=36.3%
June	22	2= 9.1%	38	1= 2.6%
July	565	59= 1.4%	64	4= 6.2%
August	179	12= 6.7%	49	4= 8.1%
September	109	15=13.7%	4	1=25.0%
October	—	—	1	—
November and December	—	—	—	—
Total	896	89=10%	172	14= 8.1%

Effects of Heat (Mesopotamia).

Week ending:	British.		Indian.	
	Cases.	Deaths.	Cases.	Deaths.
July 14th, 1917	770	104=13.5%	181	7= 3.9%
July 21st ,, ...	1,272	197=15.5%	216	38=17.5%
July 28th ,, ...	845	122=14.4%	163	12= 7.4%
August 4th, 1917	239	27=11.6%	34	3= 9.0%
August 11th ,, ...	60	8=13.3%	7	2=28.5%

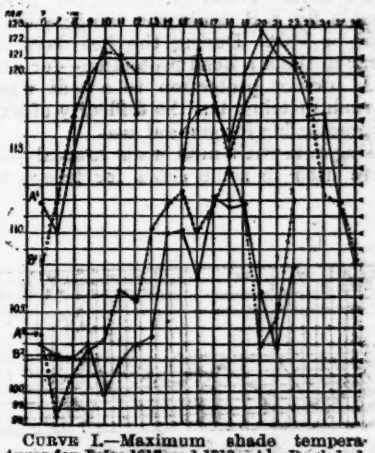
Special Rays as Causes of Heat Hyperpyrexia.—There is no evidence that other rays than the heat rays from the sun cause heat hyperpyrexia. The influence of actinic or ultra-violet rays as possible causes was investigated, with negative result, by Mackenzie and Le Count in America.[1]

Mesopotamia: Heat-stroke Figures for Different Areas (1917).

Week ending:	Baghdad.		Basrah.		Amara.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
July 14th ...	94	24=25.5%	249	40=16.5%	60	8=13.3%
July 21st ...	186	68=36.6%	403	69=17.0%	108	11=10.2%
July 28th ...	194	53=27.3%	183	22=12.0%	47	8=17.0%
August 4th ...	57	17=29.8%	69	3= 4.4%	18	6=33.3%
August 11th ...	36	7=19.4%	15	—	9	1=11.1%

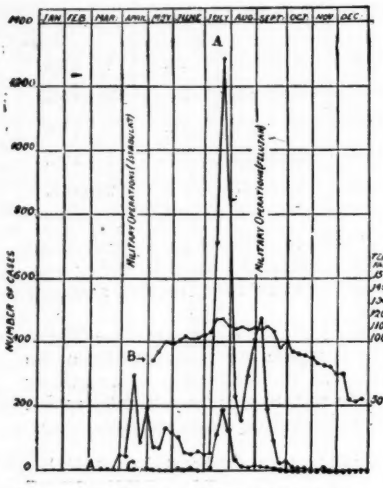
Night Temperature.—In Mesopotamia the month most dangerous as regards heat-stroke was July, since the maximum shade temperature was for a great part of the time over 110°. August was also a dangerous month. Even in these months, however, the night temperature fell considerably; thus, on the hottest day in my experience (July 20th, 1917) the maximum shade temperature was 122.8°, but at night the temperature fell to 81.6°, a drop of 41.2°. The relatively cool nights even in the hottest months render Mesopotamia a possible country for the white man; were it not for this, the incidence of heat hyperpyrexia would undoubtedly be much greater.

Stagnation of Air.—Free currents of air have a great value in protection by promoting evaporation from the skin and loss of heat. Electric fans and punkahs were largely used in Mesopotamia in hospitals and dwellings occupied by troops from 1916 onwards. They were a vital necessity to the British troops during the hot months. In this connexion it is interesting to note that when the temperature was very high the air from a fan would be like a hot blast, and unless the body was covered with a moist sheet, or a moist screen intervened, the fan would be of little value as a cooling agency and indeed might do more harm than good. The Arabs do not appreciate the value of air currents; in the native quarters of the towns the narrow streets and houses with little window space, show that they are designed with the object of shutting out the hot air rather than promoting free ventilation. In July, 1917, on some days the heat was so intense that when a slight breeze arose it was necessary to take shelter



CURVE I.—Maximum shade temperatures for July, 1917 and 1918. A^1=Baghdad, 1917; B^1=Basrah, 1917. A^2=Baghdad, 1918; B^2=Basrah, 1918.

in a covered dwelling to escape the hot wind. On July 20th, 1917, at Kut such an instance occurred when people ran for shelter to escape the scorching blast, and several fatal cases occurred.



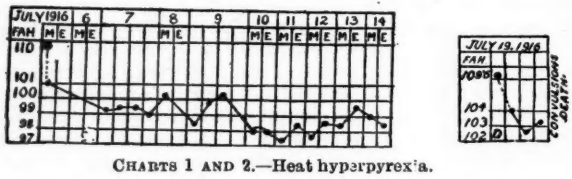
CURVE II.—Effects of heat, 1917 (Mesopotamia—British). A=Cases per week; B=Temperature; C=Deaths.

Fans.—The best use of fans in very hot weather was obtained by keeping the rooms closed as far as possible so as to keep out the hot air, the fans providing the necessary air currents in the cooler air within. Aron has shown by experiments on monkeys that still air is a potent cause of heat-stroke.

The "kata" thermometer, introduced by Dr. Leonard Hill, F.R.S., was used in Mesopotamia in 1918, and was very valuable in estimating the degrees of stagnation of air, and thus the risk from heat-stroke. For example, in a hospital ward by its means the suitability of the beds for cases liable to heat-stroke could be tested.

Dwellings for Protection against Heat.

Dwellings must be constructed of very thick walls of non-conducting material—for example, of stone, bricks, or dried mud—and it is of special importance that the roofs of huts should be thick. A coating of at least six inches of



CHARTS 1 AND 2.—Heat hyperpyrexia.

dried mud on a roof is the minimum protection against the sun's rays. Tents afforded poor protection, and in the double fly E.P. tents the temperature would often reach 135° or 140°. During the hot days it was necessary to wear in them a head protection—for example, a topee.

A further protection to a tent was an additional roof of rush matting, but the difficulty of fixing this rendered it impracticable for general use.

Dug-outs with mud walls around and a tent roof, which were used in some cases for troops, were unsatisfactory, since, though cooler in the daytime they were too hot at night; further, the dug-out earth was a favourable breeding ground for sand-flies, and sand-fly fever was always prevalent under such conditions.

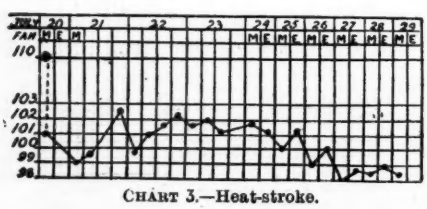


CHART 3.—Heat-stroke.

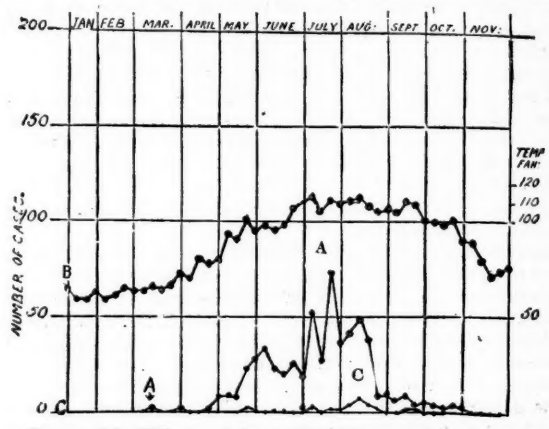
Camps under palm trees were tried, but the stagnation of air caused thereby, and the greater prevalence of mosquitos and other insects, outweighed any advantages derived from the shade of the trees.

It appeared that on the open desert double fly tents, due precautions being taken as regards personal protection during the day, were on the whole best suited for troops if huts or buildings were not available.

Age and Race.

The risk of heat hyperpyrexia depends largely on personal protection, and if care be not taken any age is subject to it. The case mortality was undoubtedly greater in men over 40.

Race is very important. Heat hyperpyrexia due to heat



CURVE III.—Effects of heat, 1918 (Mesopotamia—British). A=Cases per week; B=Temperature; C=Deaths.

alone, and not to the complication of other diseases, was very uncommon amongst Arabs and Indians; indeed, when it occurred in them almost always some complicating disease such as malaria was found as the cause. White races are much more susceptible to the effects of heat, and in British troops a large percentage of the cases were due to heat *per se*.

Alcohol.—If alcohol is taken during the heat of the day it undoubtedly predisposes to heat-stroke. Numerous individual examples of this came to my notice.

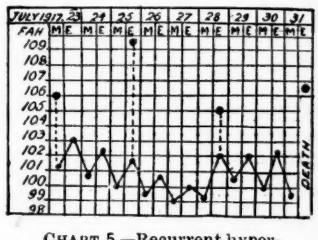


CHART 5.—Recurrent hyperpyrexia.

Exertion.—Exertion during the heat of the day is a great predisposing cause, especially if heavy kit is carried. Numerous examples of this occurred; perhaps the best instance is that shown in the 1917 curve of heat effects, where the two accessory rises in April and September were due to military operations at Istabulat and Felujah respectively. (See Curve II.) A tragic example was the sad death of Sir Victor Horsley, which was undoubtedly due to his having to walk long distances during the heat of the day in the performance of his duties as consulting surgeon.

Water.—Absence of a large supply of drinking water is a cause of heat hyperpyrexia. During the hot weather from two to three gallons a day are necessary for a man exposed to heat. In military operations this was in some cases impossible, and cases of "effects of heat" occurred in consequence.

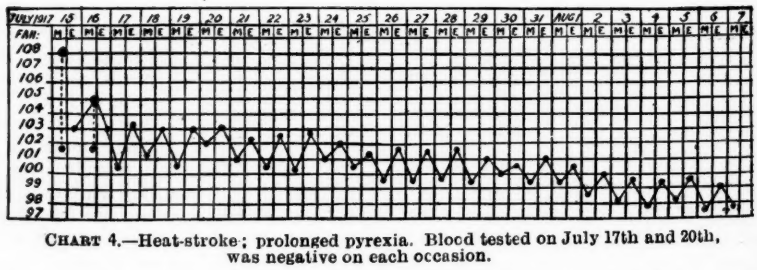


CHART 4.—Heat-stroke; prolonged pyrexia. Blood tested on July 17th and 20th, was negative on each occasion.

Personal Protection.

Clothing.—The use of efficient heat protection from the sun's rays, as by thick pith topees or an efficient service helmet, was very important. The service helmet appeared to give adequate protection, and, as it was capable of withstanding rough usage, it was perhaps better adapted for troops than the pith topee. Spinal pads 9 in. wide were necessary for the protection of the spinal cord from the

sun's rays. Light loose clothing, not too thin, was desirable.

Constipation was undoubtedly a predisposing cause, and Army Orders were issued warning against this. The high percentage of indicanuria in cases of heat-stroke is confirmation of the importance of promoting free elimination from the bowel.

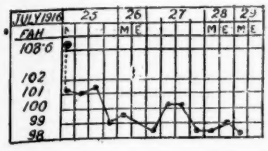


CHART 6.—Malaria and heat-stroke. July 26th, quinine gr. vi intramuscularly.

Dark Glasses.—It has been thought that the action of the reflected glare of the sun's rays on the retina was a predisposing cause of heat-stroke, and the dark green glasses issued to troops undoubtedly afforded comfort and probably protection.

Umbrellas afforded protection to those compelled to walk in the heat of the day, and were used with advantage.

Hand fans were of value in promoting loss of heat and in keeping off flies.

Predisposing Diseases.

Any disease causing pyrexia predisposed to heat-stroke in the hot weather.

Malaria was one of the commonest of these, and in Indians was almost always the cause of heat hyperpyrexia. (See Charts 6 and 7.)

Sand-fly Fever.—During an attack of this fever in the hot months hyperpyrexia sometimes occurred, and I have notes of cases of heat hyperpyrexia occurring in the apyrexial period following sand-fly fever. Captain H. C. Sinderson has suggested[2] that sand-fly fever was a common cause of heat hyperpyrexia. I cannot agree with this, because in the great majority of cases there was no evidence of sand-fly fever, and in the great incidence of heat-stroke in July and August, 1917, sand-fly fever was entirely absent.

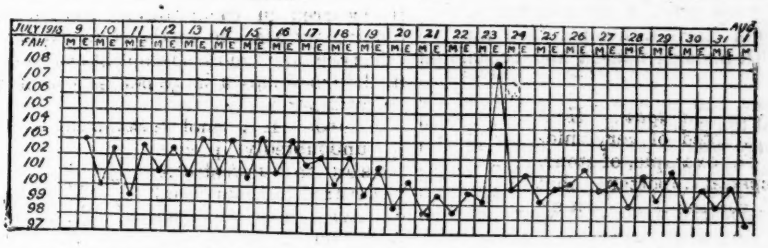


CHART 8.—Paratyphoid A, malaria, and heatstroke. July 24th, quinine gr. x intramuscularly.

The enteric group diseases, if occurring in the hot weather, were not uncommonly complicated by heat hyperpyrexia (see Chart 8).

Typhus fever, both in the acute stage and apyrexial period, might be complicated by heat hyperpyrexia (see Charts 9 and 10).

Small-pox.—I have seen heat-stroke occur during the early stages of small-pox before the appearance of the rash.

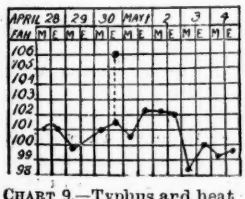


CHART 9.—Typhus and heat hyperpyrexia.

PATHOLOGY AND MORBID ANATOMY.

I have no doubt whatever from my experience that heat hyperpyrexia is a clinical entity and occurs apart from intercurrent diseases. The influence of these has already been considered. The clinical history of cases of pure heat hyperpyrexia and the course of the symptoms after the acute stage, which often exhibit prolonged pyrexia and profound toxaemia in the absence of any bacteriological infection, strongly indicate that the cause is an autointoxication as the result of the effect of heat on the body tissues. My experience led me to believe that this is the cause of heat hyperpyrexia.

The autointoxication occurring in heat-stroke was found to be associated with the presence of acetone and diacetic acid in the urine in only a small proportion of cases (about 12 per cent.), and in these the reaction was of only moderate intensity. It thus appears that heat hyperpyrexia is not due to an acid intoxication. The presence of indican in excess in the urine in acute cases is of importance and is an evidence of the autointoxication present.

Dr. W. Cramer[3] has shown that beta-tetrahydronaphthylamine will cause hyperpyrexia in animals, and it is likely that similar chemical bodies produced as the result of the effects of heat on the tissues in man may have a like effect.

No evidence of bacterial infection was obtained in a numerous series of blood cultures in cases of pure heat hyperpyrexia.

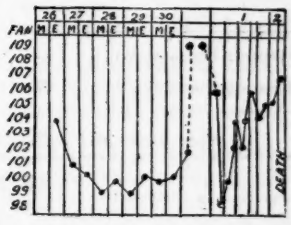


CHART 7.—Malaria and heat-stroke. From the 25th to 30th quinine gr. x t.d.s. by mouth; on the 28th and 30th intramuscular quinine.

Suppression of sweating has been stated by Dr. K. G. Hearne[4] to be the cause of heat-stroke. Undoubtedly suppression of sweating is a most important predisposing cause in many cases, especially those of Group IV in my classification, and in this connexion Dr. R. J. Love[5] has called attention to the risk of giving atropin injections, since he had observed hyperpyrexia follow the administration of atropin before an anaesthetic.

Suppression of sweating did not, in my experience, always precede heat hyperpyrexia, and though it is undoubtedly an important predisposing cause, it cannot be regarded as the primary cause. Thus some cases of heat hyperpyrexia occurred suddenly in exposed men who were in good health, without any previous evidence of lack of skin action, and in cases of the gastric type of heat hyperpyrexia no previous suppression of sweating was observed, though they had been under observation in hospital for several days.

Though entirely agreeing with Dr. Hearne's conclusions as regards treatment, I cannot accept his explanation as the cause of heat hyperpyrexia.

Morbid Anatomy.

In the *post-mortem* examinations made in Mesopotamia oedema and general hyperaemia of the brain and leptomeninges were observed, and cloudy swelling of the liver, kidneys, and myocardium was found; petechiae of the skin and mucous membranes were seen in some cases.

No definite signs beyond these were observed beyond those indicating intercurrent diseases, such as malaria with enlarged spleen, etc.

CLINICAL TYPES OF ILLNESS CAUSED BY EXPOSURE TO HEAT.

1. Heat exhaustion (mild type).
2. Gastric type.
3. Choleraic or gastro-intestinal type.
4. Heat hyperpyrexia (heat-stroke or sunstroke).

In Types 1, 2, and 3 heat hyperpyrexia might suddenly develop unless great care were taken in their removal from a hot atmosphere. Types 2, 3, and 4 were all dangerous and the prognosis grave. Of 80 severe cases of "effects of heat" of which I made careful notes, 13 (16.2 per cent.) were of the gastric type, 9 of the choleraic (11.2 per cent.), and 58 (72.5 per cent.) were hyperpyrexial.

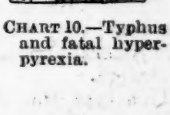


CHART 10.—Typhus and fatal hyperpyrexia.

1. *Heat Exhaustion.*

This would commence suddenly with weakness, giddiness, faintness, and inability to walk; the pulse was rapid and weak. The majority of these cases were associated with a mild pyrexia of 102° or 103°, which lasted two or three days and then the temperature became normal, the patients requiring a few days' rest before being fit for duty. A small proportion of the cases were associated with cardiac failure, the temperature being subnormal.

Returns from two British Stationary Hospitals at Baghdad (July 8th to 19th, 1917).

	Heat Hyperpyrexia (Temp. 105° and over).		Effects of Heat (No Hyperpyrexia).	
	Cases.	Deaths.	Cases.	Deaths.
Stationary Hospital (A) ...	63	15=24.0%	67	4=6.0%
Stationary Hospital (B) ...	37	12=32.4%	162	9=5.6%

Heat-stroke and Effects of Heat (July, 1917).

	Heat Hyperpyrexia.		Effects of Heat.	
	Cases.	Deaths.	Cases.	Deaths.
British Stationary Hospital at Baghdad	40	14=35%	430	31=7.2%

the skin cold and clammy, the face pale, and the pulse very rapid and feeble.

During military operations in hot weather large numbers of cases of heat exhaustion occurred. The mortality from this type of case was very slight.

2. *Gastric Type.*

This was one of the most interesting and treacherous forms; it constituted 16.2 per cent. of my series of severe cases. The patient would have a flushed face and be restless and irritable, with marked nausea and occasional vomiting.

The mouth temperature and pulse would be normal for several days. The rectal temperature showed often a rise of about 2°. Usually there was fatty enlargement of the liver. The knee-jerk was lost in all of nine cases in which it was specially tested. This was a valuable diagnostic sign. The knee-jerk reappeared when convalescence was established, the time varying with the severity of the case. Many of these cases, after four to ten days' premonitory symptoms, suddenly developed fatal heat hyperpyrexia. The following are notes of two typical cases:

CASE I.

H. Onset July 15th, 1917; the patient was morose and irritable, with a feeling of nausea. When admitted to hospital on July 17th the face was flushed, the tongue very furred, the temperature normal; vomiting occurred daily, and the liver extended two inches below the right subcostal border. On July 22nd the mental condition was somewhat muddled, and the temperature was 99.2°; nausea was present, and vomiting occurred once. At 11.45 p.m. the temperature suddenly rose to 108° F., and the patient died on July 23rd, at 1.30 a.m.

CASE II.

K. Onset July 13th, 1917. The patient became faint and collapsed and vomited, some cyanosis being present. When admitted to hospital the temperature was normal, the face flushed, the tongue furred, and nausea and daily vomiting occurred; the liver extended three inches below the right subcostal border. The mental condition showed depression and irritability, with some mental confusion. On July 23rd stupor and coma developed, the temperature suddenly rose to 108° F., and death occurred a few hours afterwards.

3. *Gastro-intestinal Type (Choleraic).*

In this type (which constituted 11.2 per cent. of my series) the onset was sudden, marked collapse occurring. The patient usually had a temperature of 101° to 103°. Vomiting was marked, and there was diarrhoea. Cramps in the abdomen and legs occurred in some cases. The face was pale, the eyes sunken, and the skin pale and clammy. The knee-jerks were generally lost; in four cases specially examined they were absent in three and diminished in one. The general appearance of the patient was similar to that of cholera.

This type was of uncommon occurrence, but the mortality was high, death often occurring within three or four days.

4. *Heat Hyperpyrexia.*

In this type, which accounted for 72.5 per cent. of my series of eighty severe cases, the onset was often quite sudden, the patient being taken ill when on duty, with a sudden high rise of temperature and loss of consciousness.

In some cases the patient when off duty would be found by his comrades unconscious and dying.

CASE III.

In one such case a soldier complained of headache in the morning; he returned to duty and was apparently better in the afternoon, and was last seen playing with a dog, but about 5 p.m. was found unconscious and dying. He died at 5.30 p.m. before medical aid could reach him, and 1½ hours afterwards the rectal temperature of 110° indicated that heat hyperpyrexia was the cause of death.

Heat hyperpyrexia frequently occurred in the very hot weather in hospital patients suffering from another disease. In them the temperature would often suddenly rise to 110°, coma and convulsions supervening. (See Charts 1 and 2.)

In many cases, however, the onset was more gradual, malaise, headache, and restlessness occurring, accompanied sometimes by nausea and vomiting. Frequency of micturition was a characteristic early symptom, and was sometimes associated with urethral pain. The temperature would be somewhat raised—100° to 102° or so—and the skin be hot and dry. These preliminary symptoms usually lasted for a few hours, sometimes as long as forty-eight. Then mental excitement and delirium would supervene and the temperature rapidly rise to 110° or so. With the hyperpyrexia coma and stertorous breathing occurred, and the face was flushed and cyanosed, the conjunctivae being congested. The pupils were often dilated in the early stage and contracted in the comatose condition. Fibrillary twitchings of muscles, and convulsions were very common in this stage, and the breathing might have the Cheyne-Stokes character. Incontinence of urine and faeces occurred with the coma. Unless the temperature was reduced by treatment death rapidly occurred from hyperpyrexia, the mode of death usually being asphyxial in type.

Marked cardiac dilatation, often associated with a systolic murmur, occurred in the severe cases. This remained for a few weeks after the attack and needed special care.

Bronchitis and congestion of the bases of the lungs occurred in some cases.

Air hunger was definitely observed in one case, and in another a spasmodic type of breathing like uraemic asthma.

Pulmonary oedema was a terminal event in the fatal cases.

The Urine.

Indican was present in excess in all of six acute cases in which a special examination was made. *Acetone* and *diacetic acid* were present in small amount in one out of eight acute cases specially tested. *Albumin* was found present in small amount in three out of eight acute cases. No casts were present.

Nervous Symptoms.

Restlessness and delirium occurred with the onset of hyperpyrexia and were quickly followed by stupor and coma with incontinence of urine and faeces. Muscular twitching and convulsions were very common with the high temperature.

The knee-jerk was almost always absent in the pure heat-stroke cases during the acute stage. Out of thirty-two cases specially tested the knee-jerk was absent in twenty-seven, diminished in two, and normal in three; in these latter cases the hyperpyrexia was probably malarial in nature. In the severe cases the knee-jerk did not return for three or four weeks, in the milder cases earlier. The presence of knee-jerks was a valuable prognostic sign, for when they had returned there appeared to be much less risk of a relapse, and the patient might then be evacuated with safety. This sign was of great practical help in deciding on the disposal of heat-stroke cases.

After the acute stage in the severe cases marked mental symptoms often remained for some weeks; irritability, mental confusion, and delusions were not uncommon. Usually these symptoms cleared up.

Defective articulation (anarthria) occurred as an after-symptom in four of the severe cases of my series. *Nystagmus* occurred in one case, and squint with diplopia in one.

Multiple neuritis associated with weakness and marked wasting of the legs, the tibialis anticus muscles being most affected, occurred in two cases.

Lumbar puncture was performed in several cases; the cerebro-spinal fluid was clear and sterile and the pressure was above normal.

Parotitis occurred in three cases of my series.

Petechiae were observed in a few of the cases showing marked toxaemia.

Many of the severe cases showed, after the hyperpyrexia had subsided, a pyrexia, for several days the temperature being about 102° or 103° (see Charts 3 and 4). In one case the fever lasted three weeks. Numerous blood cultures were made in these pyrexial cases, with negative results. Recurrences of hyperpyrexia were very likely to occur after an attack of heat-stroke unless the patient was kept in a cool atmosphere, which was often impossible. There were several instances of two and three recurrences (Chart 5).

After convalescence from hyperpyrexia attacks of headaches were common, and exposure to slight heat would induce them. These patients for a long time were very sensitive to heat, and evacuation to a cool climate was essential. In some of the severe cases showing marked persistent nervous symptoms it was clear that permanent organic changes had resulted from the effect of heat on the brain cells. Dr. R. M. Stewart[6] has described a case with persistent cerebellar symptoms following an attack of heat hyperpyrexia in Egypt.

TREATMENT.

1. *Heat exhaustion* required no special treatment beyond rest, keeping cool, and aperient medicine.

2. *The gastric type* was dangerous, and required great care in treatment. Free purgation, great care in protection from heat, large doses of sodium bicarbonate (30 grains every three hours), and rectal injections of cold solution of the same salt (2 drachms to the pint) gave the best results. The diet in all "heat" cases was chiefly lacto-vegetarian, the fat and protein being reduced as far as possible.

3. *The choleraic type* required treatment on the lines of cholera cases, including normal or hypertonic saline subcutaneously, and cardiac stimulants—for example, digitalin, strychnine, adrenalin, pituitary extract given hypodermically. Protection from heat was most important.

4. *Heat hyperpyrexia* demanded immediate application of measures to reduce the temperature. Thus, the stripping of the patient and constant application of a spray of cold water, or rubbing with blocks of ice, were essential until the rectal temperature fell to 102°, the patient being under a fan during the process. In the hospitals in Mesopotamia special heat-stroke wards were established, with overhead fans and portable electric fans for each acute case. Ice-cold water was supplied to each bed, so that the patient could have a constant spray of this; there was also an ample supply of ice. At my suggestion the acute cases were treated on an ordinary iron bed, a rush mat, with a smooth Japanese reed mat above it, being placed over the iron framework. This allowed a free current of air all round the patient, from below as well as above.

By these means the hyperpyrexia could be controlled. If enlargement of the spleen was observed, or if there was a previous history of malaria, quinine bihydrochloride gr. x was given either intravenously or intramuscularly without delay, and during the carrying out of the hydrotherapeutic measures. An injection of quinine gr. x was given if the temperature was not readily controlled by the above methods. Blood films were made at once and examined for malaria, and if the result was positive, active quinine treatment was continued.

Convulsions, which were of very common occurrence, were treated most satisfactorily by venesection, 10 to 20 oz. of blood being withdrawn. Intravenous saline after venesection was not found beneficial, since it tended to cause recurrence of the convulsions. Rectal injections of ice-cold water or of ice-cold solution of sodium bicarbonate (2 drachms to the pint) were beneficial.

Cardiac failure was treated by digitalin, strychnine, adrenalin, or pituitary extract hypodermically.

Failure of respiration was treated by artificial respiration and oxygen, or oxygen bubbled through alcohol.

Some cases with violent delirium and convulsions were treated by morphine hypodermically, and chloroform inhalations, but these methods were usually inferior to venesection.

PROPHYLAXIS.

Every care was taken by the army authorities in the prevention of heat-stroke. As far as possible no military operations were carried out during the hot weather, and as far as possible also troops were relieved from any duty between 10 a.m. and 4 p.m. Head and spinal protection were ensured by the issue of efficient helmets and topees, and spinal pads. Special light summer clothing was issued to troops in the hot months. A free supply of water was allowed to troops, and every man had a 1 gallon canvas *chagul*, so that by keeping drinking water in it efficient cooling was obtained by evaporation.

Army Orders were issued, on the advice of the D.M.S., warning against the risks of constipation and the taking of alcohol.

Billets and huts for troops were supplied with electric fans. In the case of troops under canvas special care was taken as regards the management of tents so as to ensure maximum heat protection.

Hospitals were equipped with an ample supply of electric fans and ice. In hospitals where patients suffering from other diseases showed a tendency to hyperpyrexia it was found advisable to place them in the coolest part of the wards under a fan and to cover them with a sheet kept wet with cold water.

Heat-stroke stations, with all facilities for treating cases were established in each of the base areas, and each division of troops had six such stations, so that every facility was provided for the treatment of emergency cases.

My thanks are due to Major-General A. P. Blenkinsop, C.B., C.M.G., D.M.S., of the Mesopotamian Expeditionary Force, for statistical figures in this paper, and for the interest and active measures he took for preventing and dealing with heat hyperpyrexia.

REFERENCES.

[1] *Journ. Amer. Med. Assoc.*, 1918, vol. ii. [2] BRITISH MEDICAL JOURNAL, July 19th, 1919. [3] *British Journal of Experimental Pathology*, vol. i, No. 1. [4] BRITISH MEDICAL JOURNAL, 1919, vol. i, p. 516. [5] Ibid., June 7th, 1919. [6] *Review of Neurology and Psychiatry*, October, 1918.

THE PHYSIOLOGICAL ASPECT.

BY

LEONARD HILL, M.B., F.R.S.,

DIRECTOR, DEPARTMENT OF APPLIED PHYSIOLOGY, MEDICAL RESEARCH COMMITTEE.

HEAT-STROKE results from the rise of body temperature to a height incompatible with the maintenance of the equilibrium of the physico-chemical reactions in the cell on which life depends. Such rise may result from inability of the heat-regulating mechanism to control the body temperature under the atmospheric conditions, or from exhaustion of this mechanism. Infection, drink, fatigue, by weakening the mechanism, enhance the risk of heat-stroke.

Heat-stroke may occur in either dry or moist hot shade conditions, or from exposure to sun on close, warm days. While sunburn is an inflammation of the unacclimatized and untanned skin resulting from the sun rays, sunstroke is only another form of heat-stroke. There is unreasoning fear of exposure to the sun in this country; so long as the body is exposed to cooling breeze, exposure to the sun cannot produce sunstroke. The heating effect of food, especially of protein-rich food, must be borne in mind in the tropics. Alcohol is contraindicated if taken in place of natural foods. It contains no vitamines or protein-building groups, but is a fuel to the body. Monkeys fed on a light diet of bananas and rice and given plenty of water can be trained to stand exposure to the tropical sun out of doors for many hours a day. The sweating mechanism becomes more efficient by training.

The effect of enclosure and still air is very important. When surrounded by stagnant moist air in an enclosure at body temperature, any loss of heat by convection, radiation, or evaporation of sweat becomes impossible; as heat production continues, the body temperature inevitably rises. The rise of temperature accelerates the rate of combustion in the cells, and a vicious circle is established. In the Black Hole of Calcutta the air entangled between the bodies and in the clothes of the victims became saturated with water vapour and heated to body temperature; thus heat-stroke, not suffocation, put an end to their sufferings. As the body, weighing some 60 to 70 kg., takes time to heat up several degrees to the critical temperature, people withstand temporary exposure to the heat of a

crowd or immersion in a hot bath. The weakly with feeble circulations, heart disease, or vasomotor instability, are the first to suffer.

It is easy by a few minutes' immersion in a very hot bath (107° to 110° F.) to accelerate greatly the pulse and respiration, lower the systolic pressure and raise one's rectal temperature to 103° F., to a point where one feels dizzy on standing up owing to the dilatation of the cutaneous blood vessels and the influence of gravity on the circulation. A cold douche gives immediate relief by constricting the cutaneous vessels, the rectal temperature still remaining at 103° F.

Normally, in comfortable cool surroundings, we are cooled mainly by convection, cool moving air carrying away the body heat from the skin, loss by evaporation from the skin being kept at a minimum, while that from the respiratory membrane is kept at a maximum by the breathing of cool air of low vapour tension. The vessels of the skin are toned up, activity and metabolism kept at a good level by the cool touch of moving air. In warm stagnant air the emergency method of cooling by sweating is brought into play.

The power of the air to hold water vapour, its evaporative power, increases rapidly with rising temperature; thus saturated air—

At 30° F.	holds	1.94	grains of water	per cubic foot.
At 50° F.	,,	4.08	,,	,, ,,
At 70° F.	,,	7.98	,,	,, ,,
At 80° F.	,,	10.9	,,	,, ,,
At 90° F.	,,	14.7	,,	,, ,,
At 100° F.	,,	19.7	,,	,, ,,

Wind enormously increases the evaporative power so long as the air is saturated at a temperature below body temperature by continually bringing fresh unsaturated layers of air in contact with the body.

As every gram of water evaporated from the skin or respiratory membrane carries away 0.59 calorie, the emergency method of body cooling is very effective. It is brought into play when men do hard physical labour and increase their rate of heat production five or even ten times. A high cooling power, due to cool air and wind, is required to stop sweating in such workers. There is an imperative need to so adjust the cooling powers of the air by fan ventilation in workshops that men may be saved from body heat stagnation or needless sweating, and from loss of physical vigour such as is evident in cotton spinners when contrasted with miners.

The limits of an Englishman's power to keep himself cool is passed when the wet bulb exceeds 88° F. in the still air of a chamber, even when he is stripped to the waist and resting (Haldane). When muscular work is performed a wet bulb temperature of 80° F. may be the limit. Walking in a tropical climate—wet bulb 75° to 80° F., dry bulb 80° to 90° F., may raise the rectal temperature 2° to 3° F., and send the pulse rate up to 140 to 160. Breathing hot air may so heat the blood as to produce exhaustion, even when the skin is exposed to a cool atmosphere.

The effect of wind in promoting the cooling of the body is illustrated by measurements taken with the "kata" thermometer. This is a big-bulbed spirit thermometer which is warmed up so that its rate of cooling—from 100° to 95° F. —can be taken in seconds. The cooling power of the "kata" surface at body temperature is then deduced by means of a factor in millicalories per square centimetre per second. Readings are taken with the "kata" bulb dry and wet (covered by a wet knitted cotton glove). To take an example: On a certain day the temperature out of doors in India was dry bulb 89° F., wet bulb 73° F. Now the cooling powers are as follows:

	Still Air.	Wind 1 Metre per sec.	Wind 9 Metres per sec.	
Dry "kata" ...	1.3	3.6	6.7	With dry bulb 89° F.
Wet "kata" ...	9.8	22.4	36.7	With dry bulb 89° F. and wet bulb 73° F.

The cooling powers in still air are intolerably low, those with wind 1 metre per second quite tolerable for a sedentary person, those with wind 9 metres per second quite cool. Suppose the air were saturated, the wet bulb also standing at 89° F., then the wet "kata" readings become:

Still air	3.3
Wind 1 metre per second	8.0
Wind 9 metres per second	15.1

and a wind of 9 metres a second (20 miles an hour) is required to secure comfortable cooling. In ordinary workrooms in this country a dry "kata" reading of 6 and wet "kata" reading of 18 to 20 are commonly found, and appear to be comfortable for light work. Out-of-door workers in this country are exposed to far higher cooling powers, chiefly owing to the far greater movement of the air. The stimulating effect of the cooling powers of outdoor air on metabolism is of great importance to health.

In Borneo the wet bulb temperature not uncommonly reaches 90° F., and if there is no wind the conditions must be met by punkahs and electric fans and bathing in cool water. For such conditions compressed air douches would be of value. Water condenses out of air when it is compressed, and the air escaping from compression is both cool and dry. Such air offers a method of cooling far more practicable than any method of cooling by freezing machines. It is a method used in mines where the tools are driven by compressed air.

Now let us consider warm dry air at temperatures near to blood heat. So long as the sweating mechanism remains active and there is a breeze, there is no danger of heat-stroke. On the other hand, with hot dry air (well above body temperature) and a wind, the cooling power due to evaporation of sweat may be overpassed by the heating power of the air. The simoon kills by the hot wind drying the skin quicker than it can be kept wet by perspiration, and so heating the blood. The Arab crouches down on the ground and covers himself with clothes to avoid the drying and heating effect of the simoon, and hopes it will pass before his body becomes overheated. If a hot desert wind dries the skin absorption of sun heat takes place, which is normally checked by the layer of sweat. So long as the skin is thoroughly wet with sweat the sun heat is mostly expended in evaporation and is kept from the blood.

The glistening wet skin reflects the sun rays to a large degree. The black, with his tissues protected by pigment from the lethal effect of the sun, can have a thinner skin and blood vessels closer to the surface. Thus the cooling of shaded parts of his body is better secured. The pigment on absorbing the sun rays heats the cutaneous nerve endings, and these activate the sweat glands, dilate the cutaneous blood vessels, probably through "axon" reflex, and with very little delay.

While the "kata" thermometer indicates conditions of the atmosphere which are likely to cause heat-stroke, the surface temperature of a piece of black fur (taken by stroking it with the bulb of a sensitive thermometer) gives a simple measure of the radiant heat of the sun.

The loss of heat of a resting man may be taken as about 1 millicalorie per square centimetre of body surface per second; the extra heat production due to work may put this up to 3 millicalories. The exposure of half the body to the sun may result in the absorption by the clothes of 5 to 10 millicalories per square centimetre per second. Exposure to the sun, then, greatly increases the strain on the sweating mechanism. Hence the conditions for causing heat-stroke are given by soldiers heavily clothed marching in close column in the sun on a calm day. The air surrounding their bodies becomes saturated and warmed, and the sun heat is absorbed by their clothes. The stripping off of clothes, open order, frequent rests, plenty of drinking water, and avoidance of the heat of the day for marching are the proper precautions. Clothes for the tropics should be of thin cotton material: a shirt open at neck and sleeves—the shirt worn outside the belt when conditions are trying—shorts, boots, and knitted puttees, and a light sun helmet well ventilated and impermeable to sun rays. The clothes must be light in colour to reflect the sun. The man should allow his skin to tan, so that he can wear thin material. He must avoid sunburn while tanning by wearing an opaque garment whenever the skin becomes tender. There is not only no advantage in red linings, but disadvantage owing to the double layers. The work of Hare, L. Rogers, Haldane, Pembrey,

and others established that heat-stroke is caused by overheating the body. It is not an infectious disease, as Sambon has suggested (supported by Manson's authority), but is more liable to occur in those whose vasomotor mechanism is unstable, in the constipated, the drunken, the fatigued, or infected. Heat-stroke can be produced in normal men by appropriate conditions in the experimental chamber of the physiologist. Many cases occurred in fresh troops sent straight from England and certified free from malaria on their arrival at Basra. It can be prevented by simple treatment based on the physical laws of cooling. 107° to 108° F. seems to be the critical rectal temperature at which grave effects such as unconsciousness and convulsions result. Speedy reduction from such a temperature is demanded to avoid not only a fatal termination but tissue degenerations.

Men vary in their capacity of sweating, and thus, when in Mesopotamia in 1917, the temperature rose in stages, groups of cases occurred at 105°, 110°, 115°, 120° F. Such shade temperatures out of doors meant 130° to 140° F. in the still air of a tent on the hottest days! Thick walls, double roofs, and wide verandahs well ventilated, and fans are required to make such conditions tolerable. There were none of these things to start with. The treatment often recommended in 1917 appears to have been the rubbing of the skin with ice and ice enemata. Venesection and infusion were also tried as a last resource.

While evaporation of water at body temperature carries away 0.59 calorie per gram, the melting of ice only takes away 0.08 calorie per gram; rubbing the skin with ice, moreover, obstructs evaporation. Again, 70 grams of water evaporated from the skin takes away as much heat as 1,000 grams of iced water used as an enema.

The direct cause of heat-stroke in a hot, dry atmosphere such as Mesopotamia seems to be exhaustion of the sweating mechanism, hence diaphoretics are useless; the one treatment to immediately apply is artificial sweating, established by means of a water spray and fan. Such a method of treatment was, as Director-General Goodwin tells me, well known and practised in India before the war, but it had not become generalized and taught in the books. Fans and sprays were wanting to meet the fierce heat of the summer of 1917 in Mesopotamia.

G. K. Hearne found that he could pick out in his wards at Basra all cases in danger of heat-stroke by their dry skin; cessation of sweating, generally coupled with increased micturition, in every case preceded the rise of body temperature. Those who ceased to sweat asked for the roof fans to be turned off, because they, like the dry "kata" thermometer, were heated up by the wind—the air temperature being above body temperature. Those who were sweating, on the other hand, begged for the fans to be kept on because they were cooled by evaporation, just as the wet "kata" thermometer was cooled.

Hearne used the "kata" thermometer at Basra, and so secured a demonstration of these facts. Finding out the "dry" cases by frequent visits to each patient in his wards, he put on the water spray and fan treatment; by these simple means, so he tells me, he was able to stop all farther cases of heat-stroke both in the wards and in the troopships. The great thing is to recognize the danger of the dry skin and get treatment in time. People must be warned of the danger of the skin going dry. Hearne found no signs of general exhaustion of the sympathetic system; it is the sweating mechanism in particular which fails. In the final stage of heat-stroke the patient lies cyanosed and comatose, with signs of respiratory embarrassment. The quick shallow breathing excited by heat washes CO_2 out of the blood, and so increases the alkalinity of the tissues. There is no acidosis then and no indication for the intravenous injection of a sodium bicarbonate solution. Gum saline may be tried for cases which come under treatment when collapsed, but the spray and wind treatment must first be set going.

Post mortem the organs of a case of heat-stroke show capillary congestion, as in wound-shock. Cramer lays stress on the signs of hyperaction, followed by exhaustion of the thyroid and adrenal glands. Either infection or exposure to over-warm atmosphere has these effects. Hyperadrenalism leads to increased change of glycogen into sugar and greater heat production. Injection of a small dose of tetrahydronaphthylamine into mice produces pyrexia with signs of increased activity of the sympathetic system. If the mice are kept in a cool room they survive, but if crowded in a warm place they die of heat-stroke. The drug causes intense congestion of the thyroid, with changes in the colloid and very active secretion of adrenalin. It dilates the pupil, constricts the blood vessels, causes rapid respiration, restlessness, and spasms, changes liver glycogen into sugar, and increases the respiratory metabolism and heat production. Narcotics such as chloral counteract this experimental heat-stroke, and an animal kept narcotized long enough recovers from a fatal dose. It is obvious that, while narcotics might delay, they cannot stop heat-stroke when the air temperature is above body temperature and the patient cannot sweat.

Cramer's experiments show how infection and a hot atmosphere may have an accumulative effect in producing heat-stroke by each over-stimulating and exhausting adrenal action. Observations on lower organisms show that death from excessive heat is due neither to coagulation of proteins nor to want of oxygen, for the change produced by heat is reversible if not carried too far, and is not affected by increased oxygen tension. The ultramicroscope shows an augmentation in the number of granules in the living cell and a growth in their size as the temperature rises; the increasing aggregation, reversible up to a certain point, stops the reactions of life.

NOTE ON THE DIETETIC TREATMENT OF DIABETES MELLITUS.

BY

R. T. WILLIAMSON, M.D., F.R.C.P.,

CONSULTING PHYSICIAN TO THE ROYAL INFIRMARY, MANCHESTER.

IN an article in the BRITISH MEDICAL JOURNAL in 1915 (March 13th) I recommended a line of treatment for certain cases of diabetes mellitus which I had found of much service in checking the glycosuria, temporarily at least. In cases uncomplicated by "acidosis" and certain other secondary affections, when the ordinary restriction of carbohydrates in the diet failed promptly to check the glycosuria, I advised complete rest, and for seven days a diet composed of a mixture of casein, cream, and water, given every two hours from 8 a.m. to 10 p.m. without any solid food. In many cases this diet promptly checked the glycosuria when other treatment had failed. At the end of the seven days a change was gradually made to a suitable solid diet, the amount of carbohydrates which the patient could tolerate being carefully noted.

During the war period, in place of the casein and cream solution I often used a diet composed chiefly of eggs and milk, given every two hours for seven days,[1] or a diet chiefly of suitable vegetables and jelly.[2] Both of these are more palatable, and are often useful, but not so frequently successful as the casein and cream solution. At the end of the war period the casein obtainable was often very unsatisfactory in taste and odour, and I have recently employed, with great success in many cases, the following mixture and course of treatment, which can be easily carried out. The mixture is a useful substitute for the casein and cream solution.

If "acidosis" and other serious complications can be excluded, and if an ordinary diabetic diet, with restriction of carbohydrates, fails to check the glycosuria promptly, then the patient is advised to rest on the sofa for seven days (or for a shorter period) and to take a mixture of eggs, cream, and water, prepared as follows: Three eggs are beaten up with 3 oz. of cream and a little water. More water is then added gradually until the mixture measures four pints. Of this mixture the patient takes half a pint (a tumblerful) every two hours from 8 a.m. to 10 p.m. (that is, eight times in the day). In addition he takes coffee or tea at 8 a.m. and 4 p.m., and also beef tea (warm) half a pint at 12 noon, 6 p.m., and 10 p.m. No bread, no meat, and no other foods are taken during this period.

In many cases the glycosuria is promptly checked in from four to seven days. This diet is not continued longer than seven days, and is then slowly changed to a solid diet containing only a small amount of carbohydrate food, the amount of bread and other carbohydrates which can be tolerated being carefully noted.

It is often found that not only has the glycosuria been temporarily arrested, but the power of carbohydrate

destruction in the system has been increased, so that the patient can take for a short or a long period (without glycosuria occurring) an amount of carbohydrate in the diet which would have been attended with glycosuria before the treatment.

If the glycosuria returns only after a long period, the week's treatment with the egg and cream diet may then be repeated. If the glycosuria returns in a few days after the first week's treatment with the egg and cream diet, then a satisfactory course is to advise this diet for one or two days every week-end, and to allow an ordinary solid diabetic diet, containing only a small quantity of bread and carbohydrate, during the other five or six days of the week.

A useful practical course, in these cases, is to advise that the urine should be tested every Friday; if it is found to contain sugar, then the egg and cream diet should be taken on the Sunday or Saturday, or on both days. If the Friday's urine is free from sugar, then the egg and cream diet is unnecessary on the Sunday.

This line of treatment is of great service in many cases, but unfortunately not in all. In some cases it fails, like every other treatment. In other cases, after being successful for a long period, it finally fails. It cannot, of course, be regarded as a cure for diabetes, but it is often a very useful method of checking the glycosuria at least temporarily, and of enabling us to keep it under control for a long period.

The grounds for the satisfactory action are the same as those I have described for the casein and cream diet. The treatment is unsuitable in cases with marked "acidosis," or with certain complications, such as phthisis and marked wasting, or cardiac failure.

Most patients can take the egg and cream diet for seven days quite satisfactorily. Some state that they feel remarkably well on it; others feel rather weak; only rarely do the patients complain of slight sickness, and in such cases the diet should be changed to the egg and milk diet or the vegetable diet previously mentioned.

REFERENCES.
[1] BRITISH MEDICAL JOURNAL, February 3rd, 1917. [2] *Practitioner*, January, 1918.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

NEPHRITIS: ABDOMINAL HAEMORRHAGE: DEATH.

I HAVE had lately under my care a case which, though investigated *post mortem*, remains a puzzle.

I was called to attend a spare woman who gave a history of overwork during the war in the absence of her husband on service, with the suggestion that the town in which she had been living had not agreed with her health. She had a slight rise of temperature, and complained of pain and difficulty of movement in her legs and back. There was no paralysis; the temperature was slightly raised and the pulse rather rapid. Examination disclosed no cause for the condition; there were no catarrhal conditions. Provisionally I diagnosed influenza, and for a day or two she seemed to improve. The pains in the limbs disappeared, but the pain in the lumbar region of the back persisted and seemed severe. After the menses, which were present at my first visit, had ceased, I obtained some urine, and found it to contain blood and albumin. She remained some three weeks in this condition, with small rises of temperature—sometimes better and free from backache, at other times much the same. My partner, Dr. Dick, saw her, but could find no cause for the disease. She was sent into the Cottage Hospital, where in the night she had a "collapse," from which she recovered with stimulants. The bowels had acted, but the severe pain was referred to the right hypochondriac and epigastric regions. She remained in a low state for forty-eight hours, but during the night had another attack of pain, with collapse, and died.

My colleague, Dr. Gordon Ward, made a *post-mortem* examination. The peritoneal cavity was filled with blood and blood clots, for which no source could be discovered after careful examination. The heart was hypertrophied, and the walls of the left ventricle much thickened. At the right edge of the liver was a much tumefied area, rather smaller than the palm of the hand—red, soft and friable, like a blood clot. There was blood behind the peritoneum near the right kidney, and petechial spots on the mesentery. There was also blood tracking up behind the peritoneum and into the thorax. A portion of the affected liver and a portion of kidney were sent to the Clinical Research Association, who reported:

> There is a good deal of leucocyte infiltration beneath the peritoneal surface of the liver extending some distance along the fibrous septa. There is also considerable fatty degeneration. There is no pyogenic membrane adjacent to the clot, but there are a good many polynuclear leucocytes and a little pus at one or two points in it. We think there must have been an abscess. The kidney shows some thickening of the capsule, and a slight increase of fibrous tissue in places. There is much swelling and disintegration of the renal epithelium, however, so that in addition to a slight chronic nephritis there are acute degenerative changes.

Granting that this was a case of acute nephritis grafted on a chronic condition, and that such condition may cause a haemorrhagic diathesis by causing or failing to excrete a toxin, it must, I feel sure, be rare to find death due to such extensive haemorrhage with so few symptoms of kidney insufficiency.

Sevenoaks. JAMES E. BLOMFIELD, M.D.

A CASE OF ACUTE YELLOW ATROPHY OF LIVER.

PRIVATE J. R. was admitted to the Military Hospital, Devonport, on December 26th, 1919. Four days before, without previous symptoms or any acute beginning, he noticed that his skin was becoming yellow, and that his urine was dark. He had had no previous serious illness. He served in France in 1918, but had not been anywhere else abroad.

On admission to hospital he was jaundiced, and had slight nausea, but no vomiting; the tongue was coated with white fur; the bowels were regular, the stools were solid and of a light slate colour. The temperature was normal; the pulse 64, regular, and of good volume. Nothing abnormal was found by palpation, percussion, or auscultation.

On December 30th the jaundice was intense, and he was very drowsy in the afternoon. The pupils were dilated. On the night of the same day he became very excited and violent, shouting, singing, and swearing. The pulse remained slow and of good volume, and the temperature normal. On the morning of December 31st he was semi-comatose; the pulse was rapid and feeble, and the pupils widely dilated; the temperature remained normal. A catheter specimen of urine was examined for leucin and tyrosin, which were not found. In the afternoon the coma increased, the temperature rose rapidly to 105° F., and the pulse was hardly perceptible. Cheyne-Stokes breathing supervened, and death occurred at 2.30 p.m.

Post-mortem Examination.—The liver weighed only 29 oz.; the capsule was wrinkled and loose, the substance of liver was limp and flabby, and bright yellow, with a few red patches. The heart showed numerous haemorrhages beneath the visceral pericardium. There were numerous haemorrhages also in the substance of both lungs. The aorta was bile-stained. The kidneys were soft and swollen, bile-stained, and showed many small haemorrhages. The spleen was apparently normal. The brain was not examined owing to objection of relatives.

E. C. WHITEHEAD, M.B., Major R.A.M.C.,
Officer in Charge, Medical Division, Military Hospital, Devonport.
Plymouth.

NOTE ON A TUBERCULOUS COW.

RECENTLY the inspector called my attention to a cow which had been slaughtered in my district. The animal was a cross-bred one, apparently about 10 years of age, and had reached this particular slaughterhouse, by the present exceptional conditions of grading and sale, whereby the butcher is the only man connected with the transaction who has no "say" in the choice of the animals he has to pay for.

The carcass was that of a third grade animal weighing alive about 10 cwt., and could not be said to be emaciated, and even could be described as decent beef in these times, when all animals are sent to the market in an underfed

condition. The heart, the kidneys, the neck, the throat, the head and brain showed no signs of disease whatever. With these exceptions, however, the whole of the internal part of the carcass was affected throughout. In both lungs were nodules of the size of wren's eggs, the stomach was affected externally, and the pleura, diaphragm and spleen were in a bad condition. As a matter of course I had to condemn the whole carcass, and it was sent to the knackers, who gave a written undertaking to have it treated in such a way as to prevent its being used for human food.

The cow had evidently been milked up to within about a couple of months before being slaughtered; for some considerable time, therefore, there must have been a considerable quantity of highly infected tuberculous milk sold from it, and the question of better veterinary inspection of herds is once again brought to mind, for this cow could not have failed to be susceptible to the tuberculin test.

[Dr. Scales's description of the condition of the viscera is confirmed by two photographs he enclosed for inspection.]

J. E. SCALES,
M.O.H. Radstock U.D.C.

Reports of Societies.

HEAT HYPERPYREXIA.

At the meeting of the Medical Society of London on March 8th, Mr. WARREN LOW, C.B., in the chair, a discussion on heat hyperpyrexia was opened by Dr. W. H. WILLCOX and Dr. LEONARD HILL, with the two papers printed elsewhere in this issue.

Dr. A. FEILING said that in his own experience in Mesopotamia, which almost synchronized with that of Dr. Willcox, he had found it comparatively rare for previously healthy men to be affected with heat hyperpyrexia. It was generally found that immediately before the onset the patient had had malaria or had been out of sorts as a result of constipation or some minor disorder. It was necessary for the medical officer to be on his guard, for some of these cases were very apt to mislead him. One morning in July, 1917, an officer in his own mess had a temperature of 100° F. He was advised to go into hospital straight away, but said he would keep his room for that day. Seen again at lunch, he appeared quite well, though he said that he would perhaps go into hospital in the cool of the evening, but at 4 p.m. he was found unconscious with a temperature of 110°, and died four hours later. This officer had been billeted under conditions as good as it was possible to get there at that time. Convalescence was extremely protracted in these cases. Many of the patients he had under treatment were not fit to travel at all for fully a month afterwards, as irregular pyrexia continued for a week or ten days or more, and required most careful watching. Such patients hardly ever sweated. The suppression of the sweat lasted for a week or longer, and the temperature went up to 104° to 106° on the least provocation. Since coming home, several patients had consulted him for what they described as the results of heat-stroke contracted in Mesopotamia. The principal symptom was intractable headache. As a prophylactic measure against heat-stroke, free currents of air were the one factor most essential. He had not had much success with venesection as a means of controlling convulsions. The spraying of the body with cold water and the use of electric fans was undoubtedly a desirable method of treatment, but in his experience it did not produce sweating at all. He did not regard the suppression of sweating as the cause of hyperpyrexia, but as the result.

Dr. E. KINGSCOTE said that in the Turkish bath the temperature might be up to 140° or more, and though the means of cooling down were close at hand, it was quite common for persistent headache to follow a Turkish bath and to continue for twenty-four hours. Any discomfort was more often relieved by a hot shower than by a cold douche.

Dr. CAMPBELL WILLIAMS said that the after-history of heat-stroke patients was important. He had had experience of two patients who had suffered heat-stroke in India and had both subsequently become inmates of asylums.

Mr. V. Z. COPE suggested that possibly the fact that the British ate more meat than the Arabs and Indians might account for the higher incidence of heat-stroke among them. He thought the absence of sweating one of the chief symptoms rather than one of the causes. Once while operating he found that the patient went off into a violent form of heat-stroke directly after the administration of the anaesthetic was begun; the anaesthetic was stopped at once, but the heat-stroke appeared to exaggerate and prolong the effect of what had already been given.

Sir W. HALE-WHITE described a sweat measurement test made upon himself. He took a hot bath at 108° F., remaining in it for fourteen minutes, which was as long as he could endure, then dried himself and lay down, and in fifteen minutes his temperature was 99° (it had risen in the bath to over 103°), and the sweat excreted was exactly eighty times what it was before he got into the bath. The cause of the pyrexia in these cases was undoubtedly a breakdown of the heat-regulating mechanism.

Dr. MANSON BAHR referred to the difficulty of making a diagnosis between heat-stroke and pernicious malaria, the cause of confusion being the paucity or even the absence of parasites in the peripheral blood during the first thirty-six hours after the onset of malaria. In the Jordan valley, where the conditions were somewhat similar to Mesopotamia, it seemed that persons were able to harbour the malarial parasite for some days or weeks without any symptoms whatever; then in a spell of heat there was a crop of cases which simulated heat-stroke in their clinical aspect.

Dr. WILLCOX, in replying to the discussion, agreed as to the predisposing factor of previous disease, the effect of heat in actual damage to nerve cells and brain, and the difficulty of differentiation from malaria. In his own cases, if the temperature did not go down quickly, the patient was at once given quinine by intramuscular injection.

Dr. LEONARD HILL said that the interesting point in the discussion was whether the absence of sweating was a symptom or a precursor. The fact seemed to be that the sweating mechanism was not built to stand the extraordinary strain put upon it.

SURGERY OF THE CHEST.

At a meeting of the Medical Society of London held on February 23rd, the President, Mr. V. WARREN LOW, being in the chair, Sir CHARTERS SYMONDS read a paper on the surgical treatment of the later stages of gunshot injuries of the chest and of empyema. He said that as the result of war injuries there remained a considerable number of open pleural cavities requiring surgical treatment; these had followed either the drainage of a septic haemothorax or an open wound. The same was true of some of the empyemata which had not infrequently occurred after the pneumonia complicating influenza. He gave an account of the results of some recent attempts to close these old suppurating pleural cavities.

The main object of the investigation was to inquire how far the lung could be released by removal of the adventitious layer covering it—that is, by decortication. The number of patients submitted to operation was 19, and 24 operations had been performed, counting only those made after the primary drainage. In 14 one operation was sufficient to secure practical recovery; two required a further operation for removal of the second rib; one had three operations, all comparatively small; the remaining two were still under treatment, one had had two operations, and the other a single one; both promised recovery. Of the 19, one had had four operations and another six before coming under treatment. Of the cases dealt with, seven had been the result of ordinary empyema, one was a sterile haemothorax, six were examples of septic haemothorax operated upon soon after the wound, and the remaining five had open wounds of the chest.

Operations on Old Suppurating Pleural Cavities.

The operations consisted of resection of the ribs—in some to obtain access only, in others to bring about collapse of the chest wall as well; of decortication of the lung and removal of the thickened pleura from the thoracic wall; lastly, of the transplantation of flaps of muscle into the cavity. In most of the operations an attempt was made to detach the adventitious layer covering in and binding down the lung; in others the pleura was simply scored. Access was obtained by removal of the

fourth and fifth ribs from the front. The thickened pleura was removed from the thoracic wall in those cases where muscle flaps were used. In most of the cases, while the thoracotomy served to bring about closure by the falling in of the thoracic wall, he considered that some expansion did take place when the lung was found to be airless, and that when it had receded, as measured by the probe, some expansion took place later on.

At the operation four conditions were met with:

(1) The adventitious layer stripped off easily, exposing an unbroken and glistening pleura. The lung filled the cavity and recovery was rapid. (2) The adventitious layer could be removed and the lung freed, but expansion was not immediately permanent. In this form the air vesicles were torn and air escaped in many places. Expansion varied in extent and did not reach his expectations, though, on the whole, the procedure was full of promise. (3) Detachment of the layer was possible, but not without including some of the pleura. There resulted a dark red spongy, airless lung tissue, which rose, spongelike, into the cavity and gave promise of some permanence, but so far as could be judged no part became aërated and useful. (4) This type was found in most of the cases of old gunshot wounds, and in the empyemata long under drainage. The adventitious layer was part and parcel of the visceral pleura, and the two could not be separated. The lung was dark, firm, airless and smooth on section. When torn no air escaped, and there was little bleeding. The adventitious layer was thinned as though it had undergone organization.

In estimating the size of the cavity the best information was gained by a long curved probe or metal sound. With this the most complete exploration could be made, the swing of the antero-posterior curve giving the lateral dimensions. The end thrust against the chest wall could be appreciated by the hand outside. The *x*-ray screen came next in value, both with and without bismuth. In addition to exhibiting the cavity, evidence could be obtained as to the condition of the lung and the movements of the diaphragm, the latter a most important point in prognosis. Auscultation and percussion completely failed to demonstrate the dimensions of the pleural space.

Two methods of using bismuth were employed, first by filling the cavity and, secondly, by introducing a rubber tube containing bismuth. In the first Dr. R. Heath of Weymouth directs that the patient should be placed so that the orifice is uppermost and the bismuth (30 per cent. in paroleine) injected through a rubber tube which reaches the deepest part of the cavity. The tube should be small so that the air can escape. The second, a convenient method, was to fill a thin-walled rubber tube two to three feet long with bismuth or barium, tie both ends and introduce it into the cavity; in this way a fairly accurate outline of the cavity could be demonstrated. Neither method, however, gave the lateral extent of the cavity unless a stereoscopic picture were made.

Having ascertained the position and dimensions of the cavity, the fourth and fifth ribs were removed from the front. In recent cases the ribs above and below were retracted, which gave sufficient room to decorticate the whole lung. It was necessary to remove the thickened pleura at the same time. If a little more room was required, division of the rib above added materially to the space. When the ribs were approximated, as was found in most of the cases, two ribs would require removal. The adventitious layer could, in a recent case, be broken through with the fingers in front and behind, and the lung set free. Then the lung itself was exposed, the adventitious layer coming away and leaving a normal pleura. In older cases the facility with which the adventitious layer could be removed varied greatly. In the fourth variety it could not be detached, and then the pulmonary pleura could be curetted or divided into squares or cut in vertical lines. In addition to removal of ribs to permit collapse of the chest wall, flaps of muscle had been introduced, a procedure especially advisable when the apex was affected, for it was important to leave the first rib and dangerous to remove it. The cases related showed that by muscle transplantation the apex had been closed. When muscle transplantation was done the thick parietal pleura had been removed, except at the apex. In completing the operation the anterior wound had been closed and a drain left in the old sinus in all cases with extensive cavity. In some, when the cavity had existed chiefly in the upper part with a small track leading to the opening, the drain had been introduced where the cavity was largest. An important question arose as to whether, after the lung had been freed and filled the pleural cavity, it would have been wiser to excise the old drainage opening and close the cavity. In small cavities resulting from open wounds the thick, hard pulmonary boundary was scar tissue and not a layer of adventitious material, and should not be disturbed.

The two risks in these operations were shock and septic infection of the recently divided structures. Since the use of bismuth injections had been resorted to before the operation, the danger of infection had practically disappeared. In only one of the twenty-four operations was there any anxiety. The temperature seldom reached 101° F. The men arrived, as a rule, with septic pus and small openings. When necessary the opening was enlarged without removal of bone and the cavity irrigated with saline and peroxide, and then filled with 30 per cent. bismuth in paroleine daily for three to seven days. At the operation all exposed surfaces were rubbed over with this preparation. Shock had never been of sufficient importance to demand treatment, nor had haemorrhage given cause for anxiety. The anaesthetic employed had been warm ether. After-treatment was a matter of prime importance. Colonel Soltau, who carried this out, had varied the reagents. He used the Carrel-Dakin method when the cavity became septic or the discharge abundant, after a time substituting permanganate in some cases. Chloramine-T paste was also used, but on the whole proved troublesome and was difficult to remove when suppuration continued. Peroxide was the customary reagent for irrigation; when a bronchial fistula existed oxygen was employed. Another feature of his practice was early exercise, the patient being allowed up as soon as possible, sent out when the weather was suitable, and encouraged to walk about and do work in the wards. Finally, several wounds were closed by excising the sinus and suturing the muscle and skin. An important feature in the after-treatment was the use of elastic in the bandage in the form of an elastic lace, which obviated restriction of chest expansion and limitation of breathing.

Empyema.

Speaking of empyemata, Sir Charters Symonds said it would be agreed that the chief cause of delay and failure to recover after empyema operations was faulty drainage. There seemed to be an impression in a good many minds that a large tube kept up discharge and prevented closure. He narrated instances where recovery had been delayed by too early removal of the tube or employment of one too small. Prolongation of septic infection, as shown by continued pyrexia or the abundance of pus and recurrent pyrexia associated with increase of suppuration, were very important causes of delay. He was convinced that these drawbacks could be prevented and removed by irrigation of the pleura at the operation and removal of the fibrinous material. He did not think that there was any danger in irrigation when carried out in the recumbent position. He advocated early operation when an empyema failed to heal. The time had come to interfere and release the lung when a large cavity was demonstrable by a sound or by bismuth at the end of about four weeks. If periods of pyrexia had occurred the operation was then all the more necessary.

Mr. H. RAWLENCE, who had collaborated with Sir Charters Symonds in the treatment of these cases, said that the method contrasted very favourably with the older type of operation. When using bismuth the carbonate or the salicylate were easier to introduce than the subnitrate. Anaesthesia had been by oxygen bubbled through warm ether, employing one of the special forms of apparatus used, and preceded by morphine and atropine. Patients seriously ill had expressed themselves as relieved directly after the operation. There had been a remarkable freedom from secondary haemorrhage.

Sir CHARLES BALLANCE advocated the removal of the haemothorax early in cases in which this occurred in connexion with gunshot wounds, for if left a foul empyema resulted. Before the war he had been disappointed in the treatment of chronic empyema by the operations of Estlander and Schede. From the point of view of obtaining expansion of the lung and recovery of the patient, he favoured the principle of no drainage and reliance on aspiration.

Sir GORDON WATSON said that he had found that in recently wounded men, if a hole were left in the chest the mortality was high, and he had endeavoured to get such a hole sewn up even at the advanced dressing

station. Of 3,000 cases of gunshot wounds of the chest met with during the Passchendaele fighting the mortality was 40 per cent. with an open "sucking" pneumothorax; 40 per cent. from septic pneumothorax which had been drained; and under 30 per cent. when the pneumothorax had been washed out and sewn up. On the Italian front the mortality was much better. Four or five cases of empyema in which he had sponged out the pleura with 1 in 1,000 flavine and sewn up the wound completely and thereafter aspirated daily did extremely well.

Mr. J. E. H. ROBERTS said that, provided all the solid adventitious material were removed from the chest, cases did best if the chest were closed and aspirated. It was a very ordinary occurrence for bacterial infection to disappear when this was done. Possibly the bismuth preparation would save time and be better than the Carrel-Dakin solution which he had used, but he thought that the solution had a softening action on fibrous tissue. It was advisable in empyema, when the patient's condition permitted, to clear out the fibrinous deposit both on the visceral and parietal pleura. With regard to the anaesthetic, the best results were obtained with gas and oxygen, which he combined with a local anaesthetic, believing that it increased the patient's comfort after the recovery of consciousness.

RENAL FUNCTION IN NEPHRITIS.

AT a meeting of the Sheffield Medico-Chirurgical Society, held on March 4th, Professor J. B. LEATHES, F.R.S., gave an address on the function of the kidney in nephritis. He began by referring to results described to the Association of Physicians in July last (BRITISH MEDICAL JOURNAL, August 9th, 1919, p. 165) showing that two common failures in the cases of war nephritis examined were loss of diuretic response to the intake of water and absence of the matutinal alkaline tide, two independent phenomena either of which occurred without the other. The persistence of the nocturnal urinary acidity throughout the first hours after waking showed that it was not to inability of the kidney to remove acid that a tendency to dyspnoea in such cases should be traced. The normal acidity of the urine in the evening and at night was normally accompanied by a considerable increase in the output of phosphate, and the fact that a diuresis induced by phosphate, unlike that produced by other agents, was an acid diuresis suggested that the amount of phosphate excreted by subjects who exhibited no alkaline tide might be found to be high. But this was not the case; nor was the phosphate increased, as chloride and nitrogen output are, by the diuretic flood. Taking average figures from more than a hundred tests with the hourly output of water increased to four times as much as it was during the night, the hourly output of phosphate fell at the same time to two-thirds of what it had been before the diuresis, a proportion observed equally when there was and when there was no alkaline tide. Cushny had shown that a partial obstruction to one ureter, hindering the escape of urine, tended to diminish the volume and increase the acidity of the urine from that kidney as compared with the other. Obstruction in the tubules due to the presence of red blood corpuscles or blood clots conceivably might account for diminished volume with increased acidity in some of these cases; and it was observed that it was particularly in cases that persistently passed granular casts (which could be shown to contain altered blood pigment and from which haematin could be prepared) that this combination of small volume and high acidity was common. Another peculiarity common in cases of nephritis, the tendency for the retention of chlorides rather than of urea, might also be accounted for by films of blood clot on filtering surfaces if it were shown that clotted blood exhibited the properties in regard to permeability which characterized red blood corpuscles—namely, permeability to urea, but not to sodium chloride. Experiments with blood clotted in thin layers on dialyser membranes had been begun, and so far showed a remarkable impermeability of the clot to sodium chloride. How far this might account for the phenomenon common in these cases of nephritis the experiments were not yet sufficient to decide. The very great majority were clearly cases of acute glomerulitis in which haemorrhage from glomerular tufts was probably one of the very earliest disturbances, and in some degree was probably constant.

Professor HALL, Dr. BARNES, Dr. NAISH, Dr. ABERCROMBIE, and others took part in the discussion.

TOXIC IDIOPATHIES.

AN "occasional lecture" was delivered before the Royal Society of Medicine on March 15th by Dr. JOHN FREEMAN on the subject of the relationship between hay and other pollen fevers, animal asthmas, food idiosyncrasies, and bronchial and spasmodic asthmas. Dr. Freeman had grouped these apparently dissimilar affections under the name of "toxic idiopathies," and the purpose of his lecture was to justify the grouping and the name. He began with hay fever, which he had studied longest and most thoroughly.

Hay Fever.

The great majority of hay fever cases occurred between the last week in May and the first week in July, a period which corresponded with the presence of grass pollen in the atmosphere. In these abnormally sensitive persons trouble might arise whenever the pollen came in contact with their tissues. Generally hay fever affected the eyes and the mucous membrane of the throat, but subjects who had thin skins suffered also from an intolerable feeling of itchiness, and often a rash or urticarial wheals developed on the exposed portion. Hay fever, therefore, was not a local but a generalized affection. He had also found that people sensitive to the pollen were sensitive all the year round, not simply during the pollen season. Grass pollen did not stand alone among irritants of this order. Most people who reacted to grass pollen reacted also to sedge, and many of them would react to other pollens also, such as those of the daisy tribe. The pollen of the peony seemed to be a particularly powerful irritant. The reaction of hay fever patients to these other pollens, however, was by no means uniform; some would react to particular pollens, which produced no effect on others. Three factors were needed for a pollen to produce a definite disease: it must be toxic, producing sufficient irritation in the people who happened to be sensitive to it; it must be in sufficient quantities all over the country; and it must be wind-borne. In England only timothy grass pollen fulfilled all these three conditions quite well. In America, however, there was a daisy which was peculiarly toxic, very common, and also wind-borne, and as this flower pollenated in the autumn the Americans had an autumn fever which was rather worse than the American June fever corresponding to our hay fever.

Animal Asthmas.

Dr. Freeman said that about 60 per cent. of his horse asthma patients were also subject to hay fever, though others were quite insensitive to pollen. The parallel between the two conditions was noteworthy. Horse dandruff, when applied to the skin or, in weak solution, to the eye, produced reactions exactly like those obtained with pollen. The serum, flesh, urine, and dung of the horse alike seemed capable of producing the reaction. Other members of the equine family were responsible for similar effects. He had succeeded in producing on the skin of one subject reactions not only to the curry-combings of the horse, but also to those of the zebra, the onega, and the kiang; in the case of the donkey the reaction was much smaller, possibly because this animal was further removed than the others, zoologically, from the horse. In animal asthmas, therefore, it was not only asthma which resulted from contact with the emanations of the animal, but every part of the body was sensitive. Other animals, not of the horse family, were also responsible for asthmas. A well known court official told him that he was subject to cat asthma, and on one occasion, in the royal presence, on a cat entering the room, he was seized with such an uncontrollable asthma that he had to bolt from the apartment without any opportunity of explanation or apology. Certain people were susceptible to goats, sheep, dogs, cattle, rabbits, guinea-pigs, and mice. He linked up these animal asthmas with the pollen cases, first on the ground that they were both selective, also that they both had much the same symptom-complex, and yet again, that they were both hereditary. Hay fever ran in families to an extraordinary degree, and this led him on to discover that the asthmas did also. On coming across cases of bronchial or spasmodic asthma he found that very frequently in the same family there were hay fever or animal asthma subjects, so that these conditions also were connected up, by the family link at any rate. He

also found, on getting the causal organism of the bronchitis which accompanied a case of bronchial asthma, making a solution, and getting out the endo-toxins, that it was possible to produce on the eye or the skin a reaction entirely comparable to the reaction in the pollen fevers or horse asthmas. The only difference was that in the case of bronchial asthma there was a longish period of delay before the reaction appeared. The reaction after the pollen appeared perhaps in a few minutes; that of the endo-toxins took some hours to develop.

Food Idiosyncrasies.

The Americans had lately done some work on food idiosyncrasies, and since the war he himself had turned his attention to this subject. He discovered that his hay fever patients had most startling stories to tell of aversion from particular kinds of food. One of them, for instance, could not eat apples. On one occasion, after eating an apple, he was seized with severe vomiting and diarrhoea, which lasted for a day. In another case serious effects followed the taking of a spoonful of honey; it immediately brought on a nausea so severe as to cause collapse. Apart from these well marked cases there was every degree of idiosyncrasy, down to quite minor discomfort, hardly referable to a particular article of diet. He thought it wise, when people came with dietetic troubles for which there was no obvious cause, to inquire whether there was hay fever or horse asthma in the family. Dr. Freeman believed that many other things came into this group of toxic idiopathies. He instanced a case of special sensitivity to gnat bites in a hay fever patient. As for spasmodic asthma, he thought that this ought to be called asthma of unknown origin. He believed that in this condition a similar irritant was at work to that of the pollen, and he was inclined to think that the emanations from moulds might very possibly be the cause. He discovered one man with spasmodic asthma who was specially susceptible to mushrooms. While it was too much to say that these ideas opened up a big new field in medicine, they yet threw light from an unexpected angle across an old field.

Sir ALMROTH WRIGHT said that they had heard some useful generalizations, and although he was of opinion that most generalizations were wrong, they served a temporary purpose as a basis of testing. Most of Dr. Freeman's audience would go away with a fresh set of questions to put to themselves and their patients when confronted with these anomalous cases. He thought it an admirable thing to have a lecture on generalizations rather than on those isolated facts of medicine which generally formed the substance of discussions in medical societies.

Dr. ARTHUR LATHAM said that in children under 10 asthma was not infrequently caused by white of egg and nothing else. He had often found asthma alternating with eczema; it was rather interesting if it was some foreign protein which was producing these conditions in the same individual. Sir JOHN BROADBENT said that the difficulty of supposing that all attacks of asthma were due to some special idiosyncrasy was that in quite a large number of cases there seemed to be no possible cause for the condition. He thought it likely that in purpura and haemophilia, research on the lines of endo-toxins might elicit further information.

Dr. PARKES WEBER was of opinion that some of the mysterious stories about attempts at poisoning during meals could be explained by food idiosyncrasies; and Dr. W. H. WILLCOX also thought that food idiosyncrasy would explain many of the unusual types of food poisoning which were met with. Sir W. ARBUTHNOT LANE said that every family had got certain tissue disabilities, and the particular families with whom Dr. Freeman had been dealing had their disabilities in their bronchial tubes. They all, in answer to the same stimulus, reacted in the same way, to the disadvantage of the individual.

Dr. FREEMAN, in reply to Sir HUMPHRY ROLLESTON, who presided, said that these conditions most certainly were acquired as well as hereditary. He instanced among his patients an old man of 74 who had just developed hay fever for the first time.

THE IRRITABLE HEART.

AT a meeting of the Bristol Medico-Chirurgical Society, held on March 15th, papers on the irritable heart syndrome were read and discussed. Dr. CAREY COOMBS, who dealt with the syndrome as seen in civil practice, gave an analysis of 50 cases. He said that in 90 per cent. there was no evidence of organic heart disease, and gave other reasons for regarding it as a nervous disturbance. About half the patients showed evidences of temperamental predisposition; physical effort was not a cause. Infections of various kinds, especially influenza, might be regarded as causal in 44 per cent. Distressing emotion of a protracted kind was apparently responsible for the onset of the symptoms in at least 36 cases.

Dr. C. E. K. HERAPATH outlined his experiences in a cardiac clinic of the Ministry of Pensions. Of his first 57 cases 9 were examples of various organic lesions; the rest were irritable heart cases. Among these 48 men there were 28 who dated their symptoms back to convalescence from some acute illness—influenza, trench fever, malaria, etc. Of the remaining 20 there were 11 who ascribed the onset to some form of nervous disturbance. Dr. Herapath gave an account of his methods of investigation and treatment, laying particular stress on the value of optimistic "suggestion." He had, he said, already seen enough improvement take place to justify a further application of these principles. Dr. A. G. MORRIS detailed notes of cases of irritable heart in soldiers serving in this country and developing without any infective or other obvious cause, except anxiety as to their immediate future, which there was strong reason to regard as causal. He also described his experience on boards at an overseas base, which was to the same effect, that the "D.A.H." syndrome often sprang from pure "anxiety." Dr. J. A. BIRRELL read notes of four cases of severe tachycardia following influenza, in all of which the patients were under the influence of protracted anxieties at the time when the influenza attacked them. Analysis of this tachycardia had proved it to be of the supracardiac "nervous" type.

In the discussion which followed, Dr. J. A. NIXON described experiences in France which led him to suspect infection of the heart itself as a cause of some of the tachycardias. He had seen *post-mortem* signs of early aortic syphilis and also of an acute endocarditis of unknown origin in many men killed by wounding. Dr. R. G. GORDON, on the other hand, supported the nervous theory. The kind of emotion that was most productive of this syndrome, he thought, was that expressed by the French "angoisse." Influenza allowed of the development of the syndrome with undue ease because of its action in diminishing higher centre control of emotional expression. Dr. D. A. ALEXANDER suggested that functional disturbance might set up organic disease.

NERVE SYMPTOMS IN ACUTE INFECTIONS.

ON March 12th, before the Harveian Society, Sir THOMAS HORDER delivered the Harveian lecture on the diagnostic significance of nerve symptoms in acute infections. The subject was dealt with from two aspects—the general or synthetic point of view, and the particular or analytical. The lecturer considered the different mechanisms by which nerve symptoms were produced as the result of infection of the body by micro-organisms. These mechanisms included (1) the interaction between the nerve tissues and toxins circulating in the blood (*a*) when absorbed from a focus, or (*b*) when resulting from a general infection; (2) the direct effect of infection of the pia arachnoid membrane, leading to meningitis, in which case there were subsidiary mechanisms concerned; (3) the direct effect of infection of the central nerve tissues themselves, again leading to secondary mechanisms. This last named mechanism came into play in cases of poliomyelitis in its different forms. The lecturer proceeded to refer each of the various acute infections leading conspicuously to nerve symptoms to one or more of these mechanisms. He pointed out that every virus tended to set going each one of these mechanisms, and that this tendency must be kept in mind, otherwise the occurrence of such a condition as "meningism" would not be understood. Passing to the analytical side of the subject, the main nerve symptoms and signs were discussed in turn, and comments were made concerning the particular significance of each in regard to the mechanisms already dealt with. Headache, delirium, coma, changes in the reflexes, the facies, pareses and paralysis, and other nerve manifestations received detailed consideration.

DRUG IDIOSYNCRASY.

A DISCUSSION on idiosyncrasy to drugs took place at a meeting of the West London Medico-Chirurgical Society, in the society's rooms at the West London Hospital on March 5th, with the President, Mr. HERBERT CHAMBERS, in the chair.

Sir WILLIAM HALE-WHITE, who opened the discussion, said that many idiosyncrasies were apparent, not real. Apparent idiosyncrasies were sometimes to be explained by impurities in the drugs; at other times they depended upon varying composition of the drug—the best instance of inconstant composition was ergot, which contained varying proportions of at least three powerfully active bodies—ergotoxin, tyramine, and histamine. The solanaceous plants were another instance, containing as they did varying proportions of alkaloids. Delayed excretion of a drug, causing its action to be cumulative, might cause a person to appear peculiarly susceptible to the drug, whereas in truth he was not. Examples were digitalis, lead, and opium. Again, the rate of absorption of a drug might explain some instances of idiosyncrasy. All were familiar with the profuse erythema which occasionally followed the administration of a soap enema; this was believed to be due to the soap leading to the solution of a faecal toxin. It was highly likely that variation in the intestinal contents might be the explanation of some cases of idiosyncrasy, for a drug, if it was usually slowly absorbed and soluble in the intestinal contents only with difficulty, might from abnormal alterations of the fluids of the intestine become readily soluble, and therefore quickly absorbed. Or, again, the drug might, in the intestine, become chemically changed, and the changed drug be more soluble and easily absorbed or have a different action and be readily poisonous. Apparent idiosyncrasies might again be caused by disease—for example, many cases of uraemia were benefited by morphine, yet, very rarely, the drug appeared to be a fatal poison. We were often disappointed in the relief of cardiac pain by nitrites; this might be because cardiac pain had a varying pathological origin. Passing on to the genuine idiosyncrasies, Sir William Hale-White said that no attempt could be made, in the present state of our knowledge, to state the cause in the majority of the more important examples. The most remarkable were the iodides—half a grain daily for two days had caused iodism; on the other hand, he had given 300 grains a day without any symptoms of it. Sometimes when the dose was diminished they would pass away; again, doubling the dose might lead to their disappearance. Drug rashes, sufficiently infrequent to cause idiosyncrasy, were caused by a large number of drugs. Cutaneous idiosyncrasies were seen also when drugs were applied externally; he knew personally a nursing sister who was unable to put her hands into mercury perchloride or handle mercurial gauze without getting general signs of mercurial poisoning. The selective action of lead, arsenic, and alcohol on nerves was most remarkable, and the explanation would be found, he thought, by the bio-chemist.

Sir ROBERT ARMSTRONG-JONES referred to the idiosyncrasy of some persons to aspirin, when the eyelids and face became alarmingly swollen, this lasting as a modified erythema or urticaria for nearly twenty-four hours. He spoke also of the cumulative effects of sulphonal and the appearance of haematoporphyrinuria after repeated administration of physiological doses, and mentioned the susceptibility of some persons to the pollen of the Cupressi and the Thujas. The explanation of idiosyncrasy was not, he said, completed by calling it a matter of temperament, and biochemistry could not explain the phenomenon. The familial record of dipsomania would indicate some inherited frailty, and it was interesting that the selective affinity of alcohol in mental cases was not associated with hepatic cirrhosis.

Dr. P. A. HENDLEY put forward the theory that idiosyncrasy was, in a greater or less degree, nothing more than shock produced by an increased or decreased hydrogen ion concentration in the serum. Dr. SEYMOUR TAYLOR and Dr. HALLS DALLY emphasized the excellent results often obtained by increasing the dose of potassium iodide when the patient could not tolerate small doses.

Dr. RICKARD LLOYD said that no doubt varying states of health, strength, psychical condition, and the circumstances in which the vital functions were being performed influenced the toleration of individuals to the amount and rate of dosage of chloroform and other idiosyncratic drugs.

Mr. BISHOP HARMAN had experience of a case in which a few drops of zinc sulphate solution, a grain to the ounce, put into the eye caused acute symptoms. The solution used had been subsequently found to be innocuous on six other persons.

Reviews.

SURGERY IN EGYPT.

THE book entitled *The Surgery of Egypt*,[1] which Mr. FRANK COLE MADDEN, professor of surgery in the Egyptian Government School of Medicine, has written, possesses a special character. The stay-at-home has only to turn the pages and glance at the many curious and interesting photographs in which the work abounds to realize the fascination which foreign practice has—the wealth of what are here rare diseases and the opportunities for research and alleviation of suffering. Professor Madden has written primarily for the Egyptian student, and particularly the student of the Kasr-el-Ainy Hospital. The work is planned as an adjuvant to a general textbook of surgery (Rose and Carless has been his model), the idea being to supplement such a European book in the places where it is deficient in its account of tropical diseases. The author has at times been unable to keep himself strictly to the letter of his intention, with the result that there is often a considerable overlap. He has, moreover, hardly used sufficient discrimination in his often tiresome quotation of other people's opinions word for word. Up to a point such acknowledgements are good and magnanimous, but his readers may object to Professor Madden allowing people to say things for him which, with a little more trouble, he could very well have said for himself. The book is for this reason somewhat ragged, and in its next edition will gain greatly by compression. With these reservations we have nothing but good to say. Professor Madden's surgical principles are absolutely sound, and the Egyptian student is fortunate in having so wise and able a mentor. The critic who wishes to quarrel with him over points in treatment will be disappointed, although he might well join issue on the use of cocaine, which he seems to prefer to novocain.

As might have been expected, the most valuable sections of the book deal with bilharziasis in its protean forms. The study of this disease is no insignificant memorial to the value of the European invasion of Egypt. The fatalism and indifference of the fellah, "around whom," says Madden, "much unmerited romance has been woven," are all against discoveries of the early stages of disease being made. Observations on these phases have recently been rendered possible by the disease appearing in our soldiers in Egypt. A summary is given of Leiper's interesting experiments on the mode of ingress of the parasite. Mycetoma and madura foot are ably dealt with, as are filariasis, hepatic abscess, and the Egyptian enlargement of the spleen, with which Richards has familiarized us, so closely resembling Banti's disease. It is interesting to note that hydatid cysts are rare. Another interesting point is the rarity of gastric carcinoma, 4 cases in 2,906 admissions. It is noteworthy in this connexion that gastric and duodenal ulcer are equally rare, and the author says that the day of any operation on the stomach is marked with red in the student's calendar. Epithelioma of the tongue is common, syphilis being rife.

The book has been printed by the Nile Mission Press, Cairo. The Egyptian compositors have done their work well, though the method of breaking up the page into a number of spaced paragraphs has nothing to recommend it. The photographs, which are an admirable feature of the work, have been made by the photographic section of the Egyptian Survey. If more are being taken we might suggest that we could often spare full length pictures of fellaheen if by that means the area actually diseased appeared larger.

We have no doubt that this book will achieve the popularity it so well deserves, and that it will find an honoured place on the shelves of most medical officers in our far-flung Eastern colonies and protectorates.

RADIOGRAPHY OF THE LIVER AND DUCTS.

Radiography in the Examination of the Liver, Gall Bladder, and Bile Ducts[2] is the title of a monograph by

[1] *The Surgery of Egypt.* By Frank Cole Madden, Professor of Surgery, Egyptian Government School of Medicine, Cairo. The Nile Mission Press. 1919. (Roy. 8vo, pp. xxxviii + 394; 63 plates, comprising 233 photos, 3 line drawings in text.)

[2] *Radiography in the Examination of the Liver, Gall Bladder, and Bile Ducts.* By Robert Knox, M.D. London: William Heinemann (Medical Books), Limited. 1920. (Sup. roy. 8vo, pp. 64; 64 figures. 7s. 6d. net.)

DR. ROBERT KNOX. Hitherto little reliance has been placed on the *x*-ray examination of these organs as far as British radiography is concerned, but in America many workers have published numerous papers on the subject; this monograph is, therefore, opportune. The author first gives a concise account of the anatomical considerations, which should be of value to many radiographers; this is followed by a very complete account of biliary calculi, taken chiefly from Beattie and Dickson's *Pathology*. The radiographic method is described in great detail and illustrated by stereoscopic photographs. Details of the results of a large number of experiments on the *x*-ray appearances of gall stones are related.

Opinions vary as to the percentage of cases in which stones actually present can be shown by radiography, but there is no doubt that the larger percentage of successful results will be obtained by those workers who use a powerful apparatus and cut down exposure to a minimum. The shadows on which gall stones have to be diagnosed are often very small and very faint—so faint that they cannot always be printed out from the negative; the slightest movement of respiration may entirely prevent such stones being shown. Even when shown the question of differential diagnosis is often a matter of great difficulty; gall stones have to be distinguished from renal calculi, calcified mesenteric glands, and many other possible lesions. Perhaps the two points of greatest importance are (1) if a ring-like shadow is found (due to calcareous material being deposited on the surface of cholesterin) this is strong evidence in favour of the shadow being caused by a gall stone; (2) if the shadow is smaller and more sharply defined on the plate taken with the patient lying face down than on the plate taken with the patient lying on the back, this also is in favour of gall stone.

Much of the original work described is of the greatest importance; it comprises experiments on the absorption coefficient of the various constituents of gall stones as compared with the tissues around the gall bladder, and experiments on gall stones and kidney stones to show the variations in density and exposures from tubes of different vacuum, and to ascertain the absorption equivalent of gall stones themselves.

The final chapter deals with the historical side of the work and detailed abstracts from the literature of the radiography of the liver, gall bladder, and bile ducts are given. The *x*-ray investigation of the region of the liver and gall bladder should always be employed when symptoms point to a lesion in that region, and with increasing experience the individual value of the observer will increase.

THE MICROSCOPIC ANATOMY OF THE TEETH.

IF anyone is curious to find truths stranger than fiction he needs but to seek them in nature's workshop, nor need he go far afield to find them. In his fascinating volume on *The Microscopic Anatomy of the Teeth*[3] Mr. HOWARD MUMMERY exposes nature in her most baffling complexity. Enamel formed by ameloblasts, enamel formed partly by ameloblasts and partly by a secreting gland, enamel laid down by epiblastic cells pouring a secretion into a mesoblastic groundwork, and claimed by some as enamel and by some as dentine, enamel perforated by tubes entering from the outside, by tubes entering from the inside continuous with the dentinal tubules, by both, or by none—such are some of the variations of enamel; and indeed, in no two animals does the histology of this tissue seem to be identical, nor does any order or meaning yet appear amid all its marvels; nature seems to be disporting herself, seeing how many ways there are of arriving at the same end. Dentine, by comparison, is rather an unexciting structure, and seems to fall fairly into line with bone in its main characters; but it may well be asked what nerve-end cells with axons and dendrons can be doing in the dental pulp. By his discovery of these cells and of the prolongation of their axons into the tubules of the dentine Mr. Mummery has solved the problem of the sensitiveness of dentine, and established himself as perhaps the foremost of dental histologists.

No one who reads current literature can fail to be struck by the many and divergent opinions held on the same point in dental histology, and the author has done great service by bringing together these opinions for comparison and by adding to each chapter a full bibliography. Where possible he has made a definite pronouncement, but more often than not the student must take his choice, or remembering "quot homines, tot sententiae," will leave it to others to dispute. If, however, he is a wise man and has the leisure, he will himself follow Mr. Mummery into this fairyland of science, of which only the edges are known. We heartily congratulate Mr. Mummery on his work; it is well arranged, well written, plentifully illustrated, and generally clearly expressed, though there are places—as, for instance, p. 135 et seq. (osmotic membranes)—where we are left in some doubt as to the author's meaning.

[3] *The Microscopic Anatomy of the Teeth.* By J. Howard Mummery, D.Sc.Penn., M.R.C.S., L.D.S.Eng. London: H. Frowde, and Hodder and Stoughton. 1919. (Demy 8vo, pp. viii + 382; 243 figures, 6 coloured plates. 25s. net.)

DISEASES OF THE MALE URETHRA.

DR. I. S. KOLL's book on *Diseases of the Male Urethra*[4] is altogether an excellent piece of work. The author states that he has aimed at conciseness, clearness, and simplicity, and these are the distinguishing qualities of his book, which on this account may be read with uncommon pleasure. The number and excellence of the plates undoubtedly contribute to its clarity. The coloured urethroscopic views are particularly good, and although the work is not primarily an exposition of endoscopy, these illustrations furnish a better gallery of urethroscopic views than many more ambitious works. The author, when he admits that some of his views are reactionary, probably had in mind his chapter on the bacteriology of gonorrhoea; it is, however, in accepting the bacteriological opinions of Dr. Carl Warden rather than in any of his own work that Dr. Koll shows a tendency to heterodoxy. According to these views, it is extremely doubtful whether the well-known Gram-negative intracellular diplococcus seen in urethral films is in reality the gonococcus. Dr. Warden suggests, and Dr. Koll is inclined to believe, that in the majority of cases these biscuit-shaped cocci are staphylococci that have lost their property of retaining the stain when the Gram method is applied to them. If this be so, then the old criterion—the microscopic appearance of smears—is to all intents and purposes useless, and cultural methods alone can have any value in the diagnosis of gonorrhoea. According to this theory, if biscuit-shaped Gram-negative cocci are found in a gonorrhoeal exudate a double infection is probably present, true gonococci being demonstrable only with difficulty, or possibly not demonstrable at all in such an exudate. As evidence in favour of this view is adduced the fact that the complement fixation curve for *Staphylococcus urethrae* runs directly parallel to that for the gonococcus. Dr. Warden's work, as quoted by Dr. Koll, is rather bewildering; whilst the necessity for the employment of cultural methods in the diagnosis of gonorrhoea may be fully accepted, we are not inclined to accept these revolutionary views without further evidence.

The author is not in favour of the routine resort to irrigation in the treatment of gonorrhoea, but relies on injections of albargin. He employs it in the strength of 1 per cent. in a base of gelatin and tragacanth. Of vaccine therapy he is decidedly sceptical. With the possible exception of arthritis no lesions due to the gonococcus have, in his experience, been benefited by the use of vaccine. In a chapter on urethral stricture he makes a strong appeal for conservative or non-operative treatment, as he considers that 98 per cent. of all organic strictures may be relieved without recourse to the urethrotome or knife. Patience and endurance are demanded on the part of both patient and physician, but the ultimate results obtained are better. We believe that this warning against the indiscriminate operating of some surgeons is not altogether unnecessary. The indications for urethrotomy are definite, and should be more closely observed.

The book closes with chapters on sterility and impotence, subjects too often neglected in English textbooks. These matters are as clearly and simply dealt with as the subjects of the previous chapters. Altogether we are disposed to think this book the best monograph on the subject yet produced.

[4] *Diseases of the Male Urethra.* By Irvin S. Koll, B.S., M.D. Philadelphia and London: W. B. Saunders Co. (Roy. 8vo, pp. 151; 123 figures. 14s. net.)

DR. HENRY QUIN OF DUBLIN.

MEDICINE is a profession in which a man may be extremely well known during his lifetime and yet leave so little behind that he rapidly becomes forgotten. Henry Quin (1718–1791) is a case in point, for though the most notable physician in Dublin and an eminent patron and connoisseur of art during the latter half of the eighteenth century, the only record of his life is in Dr. T. P. C. Kirkpatrick's *History of the Medical School in Trinity College, Dublin* (1912). Recently Dr. A. Blackhall-Morison's presentation of a bust of Dr. Quin to the Royal College of Physicians of Ireland has been the occasion of a scholarly Life of this Dublin physician from the pen of the Registrar of the College—Dr. KIRKPATRICK.[5] The son of Thomas Quin, an apothecary and Master of the Guild of St. Luke, Henry Quin graduated M.B. in 1743 and then disappeared for six years; but as he came back to Dublin in 1749 with the doctorate of Padua he probably obtained his love of the fine arts in Italy. Shortly after his return he was elected, as the result of an examination, King's professor of the practice of physic in the medical school of Trinity College, Dublin, and immediately started on a fashionable and lucrative practice, no doubt helped thereto by his father's recommendations and a judicious marriage.

Perhaps as the result of this early success Quin never published any medical papers, and his name does not find a niche in the *Dictionary of National Biography*. But he had many other interests; he was an accomplished musician and had a private theatre in his house for concerts; he collected cameos and intaglios which he copied with his own hand, and was the generous patron of James Tassie, who afterwards gained fame and fortune in London, and of William Mossop, the pioneer medallist of Ireland. Had it not been for his help, probably neither of these artists would have emerged from obscurity. A medal struck in his honour bears the rather remarkable legend, "The human frame is, Quin, thy debtor, none but its Maker knows it better." On St. Luke's Day, 1758, four years only after his election as a Fellow, he was chosen president of King and Queen's College of Physicians in Ireland, an office he filled on six subsequent occasions. *The Gentleman's Magazine*, in recording his death on February 11th, 1791, in his 73rd year, at his house in St. Stephen's Green, refers to him as "a very eminent physician and uncle to the Marchioness of Waterford." He left an ample fortune, which enabled one of his sons to travel and collect art treasures on Italy; while the other, Charles William, president of the College in 1786, published an octavo of 227 pages, *A Treatise on Dropsy of the Brain and on the Use of Digitalis purpurea in Dropsies*, thus following the work of Robert Whytt (1760) and Withering (1785) respectively.

NOTES ON BOOKS.

THE Edith Cavell edition of *The Imitation of Christ*,[6] by THOMAS À KEMPIS, is a facsimile of the copy which belonged to Edith Cavell, and which she had with her in the prison of St.-Gilles at Brussels in August, September, and October, 1915, up to the hour of her death. Reproduced in its pages are the markings she made against the passages she found of special help and comfort, some sixty in all. How poignant are these pages: what a clear light they cast on the training of a holy and humble life spent in the service of others! There must be many people in this country who would be glad to own a copy of this edition, for the sake of its association with the thoughts of a woman who sacrificed her life to help the wounded and fugitive. Its purchasers will also be helping to maintain the Edith Cavell Homes of Rest for Nurses, to which the proceeds of its sale will go. The possession of this volume will also serve as a reminder of the moral degradation to which the Prussian spirit leads in warfare, as exhibited by the type of man not unfairly characterized as *Pithecanthropus teutonicus* by a French writer.

Dr. HENRY J. WATT'S name is already familiar as that of an explorer of those almost unknown territories which lie where the domains of the physiologist, the psychologist, and the musician join, and which none of them has had the courage deeply to penetrate or survey. In his *Psychology of Sound* he addressed himself to the physiologist and psychologist; in his new work, *The Foundations of Music*,[7] he applies the psychological groundwork of the previous one, so as to bridge the gulf between the psychological elements of music on the one hand, and on the other "the sensory stuff and functions of music as the musicians observe them." The present volume is thus interesting chiefly to the musician who is conversant with psychological methods, and to the psychologist who is not devoid of musical capacity; among such will be not a few medical men. The work is remarkable for its lucid and original exposition of a subject presenting very great difficulties.

The forty-second volume of the *Transactions of the Medical Society of London*[8] contains the lists of past and present members and officers usual in these publications, and papers on subjects of medical education and medical interest (most of them reported in our columns at the time of their delivery) that are of no little importance to medical men anxious to keep up with the progress of medicine.

[5] *Henry Quin, M.D., President and Fellow of the King and Queen's College of Physicians in Ireland, and King's Professor of the Practice of Physic (1718–1791).* By T. Percy C. Kirkpatrick, M.D. Dublin: University Press. 1919. (Sup. roy. 8vo, pp. 66; 6 illustrations. 10s. 6d. net.)

[6] *Of the Imitation of Christ.* Four Books by Thomas à Kempis. The "Edith Cavell" edition. London, Edinburgh, Glasgow: Humphrey Milford. 1920. (3¾×6; pp. 229. 2s. 6d. net.)

[7] *The Foundations of Music.* By Henry J. Watt, D.Phil., Lecturer on Psychology in the University of Glasgow. Cambridge: University Press. 1919. (Med. 8vo, pp. 239. 18s. net.)

[8] *Transactions of the Medical Society of London.* Vol. 42. Edited by Edmund Cautley, M.D., and Donald Armour, C.M.G., F.R.C.S. London: Harrison and Sons. 1919. (Demy 8vo, pp. iiii + 253; illustrated.)

NEW STAFF OF OUTDOOR MEDICAL OFFICERS OF THE MINISTRY OF HEALTH.

IN connexion with the appointments for medical officers which the Ministry of Health announces in our advertising columns this week, the Ministry supplies the following particulars, which may be of interest. The new staff will include both whole-time and part-time medical officers. Each whole-time officer will be stationed in the area in which he works. Particulars as to the part-time appointments will be announced later.

The duties of the whole-time officers will be partly clinical, partly administrative; of the part-time officers, clinical only. The clinical duties of the medical officers will consist in examining insured persons referred to them by approved societies or doctors, in advising the societies and doctors on questions of incapacity for work, and in advising doctors on questions of diagnosis and treatment. The clinical duties will thus combine those of referee and consultant. For cases of special medical difficulty specialist advice as to diagnosis or treatment will be made available for the assistance of the medical officers.

The administrative duties will include examining health insurance medical certificates, records, reports, and prescriptions, and making inquiries of insurance practitioners respecting any points arising on these, or arising out of the examination of insured persons. The medical officers will also make such other inquiries and take such action, in connexion either with the work of the insurance medical service or with other branches of the work of the Ministry, as the Ministry may from time to time require.

The Minister proposes to appoint in the first instance eighteen whole-time officers for England and three for Wales. In addition there will be a small number of supervisory posts. It is contemplated that this number of whole-time officers may be increased (with a corresponding reduction in the employment of part-time officers) as soon as sufficient experience has been gained of the working of the arrangements.

Although particulars of the part-time appointments are not yet available, it may be stated that the work of part-time officers will be arranged, so far as the nature of the case permits, in definite half-day sessions at fixed centres; in the more remote parts of the country it will be necessary to employ doctors specially for single cases. Sessions will be held at the various centres at such periods (weekly, fortnightly, or monthly) as may be found necessary to deal with the flow of cases. So far as it can be avoided, a practitioner working part-time will not be called upon to examine cases within the district in which he ordinarily practises.

The Minister is appointing a Selection Committee (of which the personnel will be announced shortly) to consider all applications for the appointments which are now advertised, and to make recommendations to him.

British Medical Journal.

SATURDAY, MARCH 20TH, 1920.

THE PSYCHO-NEUROSES.

WE commend to all interested in the working of the mind, whether healthy or disordered, the admirably clear and comprehensive address by Dr. Henry Head which we have the advantage of publishing this week. He presents the matter in a way which, we hope, may tend to diminish the bitterness imported into discussions on psycho-analysis—bitterness on the one side due to a revolt against the extravagances of Freud himself, who seems to have been so obsessed by his theory of the importance of the sexual content that he has been unable to do justice to other fundamental elements. Dr. Head makes all this very plain, but the address must be read and digested as a whole; isolated paragraphs must not be picked out to support this or that theory. The address in its conception irresistibly recalls the teachings of Hughlings Jackson, and we conceive that no higher compliment could be paid to a living neurologist. The comparison arises no doubt through the manner in which Dr. Head handles the doctrine of the control of the optic thalamus, the centre associated with the pleasure or discomfort induced by afferent impulses. The control exercised by higher centres over the more primitive activity of the thalamus endows the animal with the power of choice, but normally this control is automatic, not voluntary. If it ceases to be automatic the mind adopts several different methods of curbing the desires to which it has determined not to yield. It curbs the sexual desire and it curbs the other great basal factor—the desire to avoid pain and discomfort. Of all instincts self-preservation is the most deeply innate; it may, as in war, be curbed by tradition and education, but there ensues a conflict which may lead to morbid consequences. Thus the private may develop a conversion hysteria and is carried paraplegic from the danger zone, while the officer becomes the victim of anxiety neurosis.

The contrast is well illustrated in the course of an essay on the psychoses and psycho-neuroses contributed to the Naval History of the War by Dr. Thomas Beaton, lately temporary Surgeon Lieutenant R.N.[1] He states that of the psycho-neuroses of the navy, 95 per cent. were of the nature of anxiety neurosis, which, in his opinion, was the outcome of the perseveration and overaction of the fundamental biological defensive mechanism of the organism to the psychological stimulation by fear. The work of Cannon in regard to the relation between the activities of the endocrine organs, the sympathetic nervous system, and the occurrence of emotional mental states, is quoted, and Mott's conception of the "vicious circle"—the chronic emotivation producing a definite disturbance of the physiological balance of the endocrine system which, in its turn, sets up constant emotional unrest in the mind—is thoroughly endorsed. The strong clinical resemblance existing between anxiety neurosis and Graves's disease is noted; Dr. Beaton found that a remarkably high percentage of his cases of anxiety neurosis showed clinical evidences of thyroid hyperactivity. McCurdy's view that shell shock is purely a conversion hysteria belonging to the hysterical or suggestion type of neurosis is accepted. Men who served afloat were little affected by this form of disorder; such cases of hysterical paralysis or loss of sensation as occurred arose in men serving in the naval division with the army ashore, or in individuals who gave a history of pre-war manifestations, and in whom the symptoms developed during training before they were exposed to any actual war stress. This freedom of the navy from the hysterical neurosis is attributed to two factors: First, the man in the navy was not subjected so frequently as his comrade in the army to the actual strain of battle, and consequently did not experience the vivid emotional disturbances accompanying imminent unavoidable danger. The sailor had to bear the stress of chronic anticipation rather than of immediate realization of vivid fear, and consequently developed the anxiety neurosis rather than the hysterical dissociation. Further, when the actual sea battle occurred, fear, however vividly felt, would tend to maintain full physical capacity rather than aid in the acceptance of a disabling loss of function. As the second factor the theory of Rivers as to the effect of the army training in producing a heightened suggestibility is considered, and it is pointed out that the naval training aims at producing a reasoning unit of a service, while army training tends to create the perfect but machine-like automaton, which can be unfailingly set into motion by the word of command, but which has correspondingly lost the faculty of criticism of its own actions.

The treatment advocated is mainly the application of psychological principles in a common-sense manner, each case being treated as an individual problem. The psychoses met with in the navy did not differ in their clinical presentment from those of civil life. Complete and early recovery occurred in a large number of the cases, and a strong appeal is therefore made for the earlier treatment of the psychoses in civil life. The naval or military case is got under control and treatment from the earliest phase of the disorder, and the marked tendency to recovery was partly if not largely due to this circumstance. The classification of the psychoses adopted by Dr. Beaton cannot be regarded as satisfying, but probably it was dictated by the need for simplicity. His statement that recovery took place in 50 per cent. of his cases of dementia praecox must be regarded with doubt, but the term is probably used to cover a wider range of case than present knowledge would perhaps justify. In discussing prophylaxis reference is made to the methods of the American authorities in making a psychological examination of the recruit as well as determining his fitness for service on purely physical grounds. The statistics from the Royal Naval Hospital at Chatham which Dr. Beaton gives show that there was a great increase in the cases as the war went on, and also bring out the curious point that they were always more numerous in the third quarter of the year than in any other.

To return, after this long digression, to Dr. Head's illuminating address, it is to be noted that he accepts Freud's conception of the process of repression and its bearing on the genesis of the psycho-neuroses, and also the opinion that forgetting is not a negative procedure but a positive act, although we gather that this doctrine is to be applied only to unpleasant experiences, and is to be qualified by what he goes on to say as to adaptation and regression. With regard to the latter, every one must have had experience of an unexpected return to a previous habit, and the regression which afflicts the soldier is an analogous phenomenon. One great merit of Dr. Head's address is that he speaks of the psycho-neuroses in terms of processes common to the mind and to the physiological

[1] *Journal of the Royal Naval Medical Services*, January, 1920.

functions of the nervous system, and in the concluding passages he has a mes-age for every member of the profession. The psycho-neuroses of war are comparatively simple when compared with those of civilian life, and in the attempt to solve the complicated problem it is a great advantage to be able to choose examples which show the smallest number of variable factors.

THE DIAGNOSIS OF LETHARGIC ENCEPHALITIS.

THIS country has happily been spared any serious recrudescence of lethargic encephalitis or epidemic encephalitis. Other countries have been less fortunate. New York and some large cities of America have suffered recently, and it would appear that the disease has again become active in France also. As we have noted from time to time, the disease has been the subject of discussion both in its clinical and pathological aspects at several meetings of the Academy of Medicine. There was general agreement that the cardinal symptoms of the disease were somnolence, palsy of cranial, especially oculomotor, nerves, and fever; attention was fixed largely upon the question of the existence of lymphocytosis of the cerebro-spinal fluid, and the diagnostic value of its presence. Cases exhibiting lymphocytosis were reported by Achard, Netter, Widal, and Marie,[1] and similar observations have been made by observers in this country. The opinion has generally been held that while lymphocytosis of the cerebro-spinal fluid may occur, it is the exception rather than the rule, and that its absence cannot be held to invalidate the diagnosis. With this opinion Marie, in his concluding remarks, concurred, and pointed out that while a moderate degree of lymphocytosis does not exclude the possibility of lethargic encephalitis, any very marked and lasting amount should lead to serious reconsideration of the question whether a condition of real meningitis, notably tuberculous or syphilitic, may not be present.

All are agreed that lymphocytosis, when found in cases of encephalitis lethargica, is a transitory phenomenon which clears up without treatment in all cases progressing to recovery. In this connexion we must remember that lymphocytosis may be found in the cerebro-spinal fluid in many different conditions. Tuberculous meningitis, syphilis of the central nervous system, including tabes and general paralysis, sleeping sickness, and the meningitis of mumps, are some of the more important of such conditions. Grévet[2] has even recorded a case in which swelling of the parotid glands, combined with a meningeal state and the existence of well-marked lymphocytosis of the cerebro-spinal fluid, led for a time to an erroneous diagnosis of mumps in a case which eventually proved to be one of lethargic encephalitis. Of all the conditions mentioned tuberculous meningitis and syphilis of the central nervous system are those most essential to exclude, particularly the latter, in which prompt and appropriate treatment may mean so much to the patient.

This occurrence of lymphocytosis of the cerebro-spinal fluid, as well as the general resemblance on etiological, clinical, and pathological grounds, at once forces a comparison with poliomyelitis and polio-encephalitis, with which the disease was for a time identified by many observers. Calhoun[3] has recently defined the pathology of lethargic encephalitis as an acute infiltrative encephalomyelitis, the most marked changes being found about the blood vessels of the thalamus, the floor of the fourth ventricle, and in the white matter of the spinal cord. While the changes are very similar to those occurring in poliomyelitis, he considers the absence of haemorrhages in the nuclei and grey matter a point of distinction. Mott[4] has described four kinds of lesions—infiltration of the walls of the small blood vessels and especially of the veins with lymphocytes and plasma cells, foci of interstitial inflammation, lesions of the nerve cells in the shape of chromatolysis but only exceptionally neuronophagia, and foci of haemorrhages. The last named he considered the most obvious microscopic change.

Whether any very clear distinction can be made on microscopic grounds alone is perhaps still a moot point, but the clinical characters, as well as the seasonal incidence of the two, make it practically certain that we are dealing with two distinct infections, though similar in their nature and habitat in the body. The virus of poliomyelitis has been demonstrated to exist in the nasopharynx of both patients and contacts. The filtrate of such secretions has been used successfully to reproduce the disease in animals, and Noguchi and others claim to have cultivated the organism on special media. It appears that recent attempts to repeat the experiments with the virus of lethargic encephalitis have been successful. Strauss, Loewe, and Hirschfeld[5] have filtered the secretions of the nasopharynx of patients, and by inoculation into monkeys and rabbits have reproduced a disease similar to that occurring in man. Further control experiments, however, are required. The similarity between the two diseases is therefore close, and what has been said of the lymphocytosis of the cerebro-spinal fluid in lethargic encephalitis may be held to stand as true of poliomyelitis. In the latter a meningeal variety of the disease has been postulated and may explain the rather rare cases in which marked lymphocytosis of the cerebro-spinal fluid is found. In connexion with these two conditions it is interesting to recall the observations of Gordon,[6] who has described a fatal disease in children presenting the picture of a general infection of the nervous system and particularly of the bulb. These cases exhibited lymphocytosis of the cerebro-spinal fluid.

It is probable, therefore, that there may be many varieties of virus, as yet not clearly differentiated, which are capable of causing a diffuse inflammation of the central nervous system, and producing the clinical picture of an acute nervous disease. The different points in the nervous system attacked will naturally be responsible for the many different clinical shapes which such diseases may take, and the nature of the infection must be judged rather from its epidemiological and general characters than from the particular disturbances of function which it produces. We have already ground for hoping that further experience and research will aid us in differentiating such infections.

THE RECONSTRUCTION OF THE INCOME TAX.

The report of the Royal Commission on the Income Tax was issued on Wednesday evening. It is signed by all the surviving members of the Commission, subject to minority reservations on certain points. When the Commission was appointed it was announced on behalf of the Government that it was hoped that the report would be available in time

[1] *Bull. de l'Acad. de Méd.*, Paris, 3e série, lxxxiii, Nos. 1, 3, 4, 5.
[2] Grévet, *Gaz. d. Hôp.*, February 22nd, 1919.
[3] Calhoun, *Arch. Neurol. and Psychiat.*, Chicago, vol. iii, No. 1.
[4] Mott, Roy. Soc. Med., BRITISH MEDICAL JOURNAL, 1918, ii, p. 488.
[5] *Bull. de l'Acad. de Méd.*, Paris, 3e série, lxxxiii, No. 3.
[6] Gordon, *Lancet*, 1918, i, 655.

for its findings to be utilized in that thorough reconstruction of the income tax which is to be a leading feature of the ensuing parliamentary session; the substantial unanimity which has been achieved will materially strengthen the hands of the Chancellor of the Exchequer in dealing with what has become a pressing and important national problem.

The Commission has published seven volumes of evidence, including over 28,000 questions and answers in the course of the cross-examination of the witnesses, who between them have represented the difficulties and hardships of the present system from every point of view. The evidence given on behalf of the British Medical Association by the treasurer, Dr. G. E. Haslip, was reported in our issue of December 13th, 1919, p. 783. The publication of the detailed report has been awaited with keen interest by that large and increasing section of the community which is directly affected by the income tax and is concerned to see the present complicated system of rates, abatements, and various personal allowances reduced to a simpler form, which, while furnishing sufficient safeguard against dishonest evasion, will enable each taxpayer to understand his liability without the expert assistance that at present is almost universally essential.

The suggestions put forward by the Commission naturally fall into two classes, dealing first with the general scheme of the tax, and secondly with its administration. It is recommended that what has hitherto been called unearned income should be known as "investment income," and that earned income should be reduced by one-tenth to arrive at the assessment. From the assessable income—that is, the actual investment income, or the earned income reduced by one-tenth—should be deducted the allowances for the taxpayer himself, his wife, children, dependent relatives, etc., in order to arrive at the taxable income. When this taxable income does not exceed £225 the amount would be charged at half the standard rate of tax. If the taxable income exceeds £225, this amount, £225, would be charged at half the standard rate of tax and the excess over £225 at the full standard rate of tax. The effect of the recommendations is illustrated by a number of examples with which we cannot at present deal; we must content ourselves with saying that in the case of a married man with a family of three young children and an earned income of £500 and no investment income the taxable income would be £135, and the effective rate of tax would be equal to about 9¾d. in the £. Another case given is that of a man with an earned income of £1,500, who owns his residence subject to ground rent of £6, and has £250 in taxed dividends. Assuming that he is entitled to allowance for wife and three children, his taxable income would be £1,335, and he would pay £368 11s. The real effective tax in this case would be equal to 4s 1d. in the £. The Commission considers that graduation of incomes exceeding £2,000 can best be effected by a super-tax in addition to the ordinary income tax, and it is advised that the super-tax rate should be increased in the case of an income of £2,500 from 1s. to 1s. 6d. on the extra £500, and so on. It is recommended that it should be open to any partner to claim that his share of the partnership profits should be separately assessed (at the place of business), so that his private concerns may no longer be known to his fellow partners. It is also advised that the profits of the year immediately preceding the year of assessment should be taken as the basis for assessment, and that all income from employments now assessable under Schedule D should be transferred to Schedule E. Under that schedule the basis of assessment would be the remuneration of the employee for the year to which the assessment relates.

Other points dealt with are the elimination of the double liability to income tax within the Empire of income arising in a colony, dominion, or British possession, but receivable in the mother country, and the very vexed question of the liability to income tax of co-operative dividends; on this last there is a reservation by a minority of the Commission, supporting the present official view that such dividends do not come within the scope of an income tax.

On the administrative side the recommendations appear to be directed mainly to the elimination of locally appointed assessors and collectors, the inspector of taxes being made legally responsible for seeing that the work of assessment and collection is performed, presumably with such whole-time staff as the Board of Inland Revenue may be able to supply. This change would restrict the functions of district commissioners of taxes to the exercise of their judicial powers in the hearing of appeals. This is a matter which will, no doubt, be the subject of very full parliamentary discussion; *primâ facie* the proposals imply a complete breach with the original theory of the tax—for example, that it was to be locally administered to avoid unfair pressure by the co-ordinating Government department, but the reply on the other side is that in practice the inspector is already performing the functions which in theory the district commissioners should perform. Whether the suggestion is ultimately adopted or not will presumably depend on the weight of evidence as to the present *de facto* position.

Further detailed comment on the Commissioners' voluminous and complicated report must be deferred.

THE JUNE MEETING AT CAMBRIDGE.

THE annual meeting of the British Medical Association at Cambridge this year begins at the end of June, not, as is customary, towards the end of July. The President's address will be given on Tuesday, June 29th, and the Sections will begin on the following day, June 30th. The College authorities have offered bedrooms for a thousand visitors, and married members will be able to find accommodation in the numerous university lodgings in the town.

MEDICAL AMBASSADORS TO THE UNITED STATES.

WE are indebted to Dr. Salusbury MacNalty for calling our attention to the fact that there is an interesting precedent for the appointment of a member of the medical profession to be the chief diplomatic representative of this country in the United States of America. Sir Auckland Geddes, K.C.B., M.D., has just been appointed Ambassador Extraordinary and Minister Plenipotentiary in Washington. Sir Charles Vaughan, G.C.G.H., M.D., was appointed Envoy Extraordinary and Minister Plenipotentiary to the United States in 1825. He was the son of Dr. James Vaughan of Leicester and was born in 1774; he was thus eight years younger than his brother, Sir Henry Halford, physician to George IV, and for twenty-four years President of the Royal College of Physicians of London. Henry Vaughan inherited a large property on the death of Lady Denbigh, widow of his mother's cousin, Sir Charles Halford, and changed his name by Act of Parliament to Halford. Charles Vaughan, like his brother, was intended for the medical profession, and was educated at Rugby and Merton College, Oxford. He graduated B.A. in 1796 and M.A. in 1798, and became a Fellow of All Souls in the same year. He attended lectures on medicine

both in Edinburgh and London, and took the degree of M.B. in 1800. In the same year he was elected Radcliffe Travelling Fellow in the University of Oxford. He was thus able at an early age to indulge his master passion for seeing other countries. He got as far east as Baghdad and Persia, and after a winter in Russia reached England in 1806. Two years later he entered diplomacy as a member of Lord Stuart de Rothesay's mission to Spain. He carried dispatches during the Peninsular war, and in 1809 published a *Narrative of the Siege of Saragossa*. In the same year he became private secretary to the Secretary for Foreign Affairs, and in the following year was Secretary of Legation (later of Embassy) in Spain. In 1820 he became Secretary of Embassy in Paris, and in 1823 was made Minister-Plenipotentiary to the Confederated States of Switzerland. In 1825 he was appointed Envoy-Extraordinary and Minister-Plenipotentiary to the United States, becoming at the same time a Privy Councillor. In 1833 he was created Knight Grand Cross of the Guelphs of Hanover. He left Washington in 1835. Of these years the *Dictionary of National Biography* says: "His services in the United States covered one of the most interesting periods in American history. He was intimate with such men as Story and Clay, and he had to watch such burning questions as that of the boundary with Canada, the position of the South American republics, the slave trade, and the tariff." He was sent on a special mission to Constantinople in 1837, and much of the remainder of his life was spent in travel. He died in London in 1849.

SIR WILLIAM OSLER AT THE BODLEIAN.

One of the latest of the tributes to Sir William Osler's memory and services is published in the *Bodleian Quarterly Record*, signed with the well known initials of Bodley's librarian, who only retired from that position last year. "F. M." says that Osler was a firm and constant friend to the Bodleian; the library was his admiration and delight, and as a curator and a member of the standing committee he had considerable influence on its admistration. He promoted the establishment of the room for musical students, as well as the science research room at the Camera, and when a good opportunity for a special purchase presented itself he was among the first to offer liberal support and to engage the interest of friends. This was notably the case when the original Bodleian First Folio of Shakespeare was repurchased in 1906. The foundation of the *Bodleian Quarterly Record* itself was due to Osler's suggestion and initiative, while his generous action in guaranteeing to pay for some years out of his own pocket such deficit as might occur, enabled the Curators to launch it with confidence on its career. He heartily agreed with its threefold object—to interest friends of the library, to supply classified lists of recent acquisitions, and to print documents and records of importance. The wonderful collection of books, grave and gay, massive and light, out-of-the-way and trivial, which came to the Bodleian under the will of Robert Burton, the author of the immortal *Anatomy of Melancholy*, made, we are told, a special appeal to Osler's feelings. The collection contains the sources of a work which more than any other combined Sir William Osler's chief interests—humanity, literature, and medicine—and we learn that it was Osler's intention, had he been spared, to prepare a final edition of that great work, based on a collation of the early editions (to be undertaken by a committee of friends), and furnished with annotations by the master's hand. The notice from which we are quoting concludes with the following words: "If he came to you as a friend, he had a way of drawing up his chair to yours, as though all his time were at your disposal, with looks and words of infinite compassion if you were in ill case, of helpful encouragement if you were striving against hindrances, and sympathetic comprehension if you were in doubt or difficulty. These qualities are akin to the divine. Sir William's friends all over the world feel his loss with personal pain and imperishable regret, not only from his great and varied gifts of mind and intellect, but more than all because those gifts were combined with real human kindliness of heart, and because his whole life was devoted to the welfare and betterment of his fellow men."

TOXICOLOGICAL INVESTIGATION OF ACUTE ALCOHOLISM IN MAN.

In medico-legal practice it is of the utmost importance to determine the part played by alcoholism in the death of a person under suspicious circumstances. The result may change a charge of murder into one of homicide, or it may serve to place in their proper relation several factors found at necropsy any one of which might otherwise be held responsible. The application of Nicloux's method for the quantitative estimation of alcohol in organs and body fluids may prove to be of considerable value in this respect. Balthazard and Lambert[1] have established the fact that alcohol may be quantitatively estimated in the blood, urine, viscera, and muscles for several days after death, and that at least till the commencement of putrefaction the alcohol content does not appreciably diminish. A measured quantity of blood or urine, or a certain weight of solid tissue, is distilled and the amount of alcohol determined by the potassium bichromate method. From the amount found it is possible to calculate the amount of alcohol ingested before death. The experiments of Gréhant and Nicloux on animals, confirmed in man by Sweisheimer, showed that the amount of alcohol per 1,000 found in the blood corresponded exactly with the quantity of alcohol ingested per kilogram of body weight. Thus, if a quantity of alcohol represented by 1.57 c.cm. for each kilogram of body weight were taken by a non-alcoholic individual, after a lapse of two and a half hours the blood would give approximately 1.57 c.cm. of alcohol per litre. In the case of inveterate alcoholics, in whom the absorption and elimination of alcohol is said to be more rapid, the maximum alcoholic content of the blood is obtained in an hour and a half and it is relatively lower than in temperate individuals. Hence the quantity of alcohol estimated in the blood after death will represent the minimum ingested before death, and it has been shown that death in acute alcoholism generally occurs in the period of maximum alcoholic content of the blood. The urine gives figures practically identical with those of the blood. Amongst several important medico-legal cases of alcoholism the authors relate an example of the way in which the method may be employed: A habitual drunkard, weighing 51 kg., was found dead; the autopsy was made five days afterwards; the blood and the urine gave, in terms of absolute alcohol, 5.5 c.cm. per litre. Multiplying this by the weight in kilograms, we get 280.5 c.cm. of absolute alcohol ingested, a figure that corresponds to about 3 litres of wine or half a litre of brandy.

THE WHITE MAN IN WEST AFRICA.

The Colonial Office has issued a set of returns giving the vital statistics of non-native officials in West Africa for the years 1915–1918. During this time the West African service was affected by war conditions, and it might have been supposed that the Colonial Office would have been at the pains to compose a report on so well-defined a period. This, however, has not been done, and we are presented with a series of reports for each year, from which it is laborious to extract any general conclusions. In 1915 the death rate among the European officers was greatly increased by the torpedoing of a ship by a German submarine, in consequence of which 27 officers were drowned. During this year the majority of the West African Frontier Force, and a large number of civil officers attached to it for military service, were engaged in war operations in

[1] *Comptes rendus de la Soc. de Biologie*, lxxxiii. No. 7, 1920.

the Cameroons, where they were exposed to the risk of casualties and to greater risks of disease. Moreover, the consequent retention of officers beyond the time of their normal retirement, or their recall to duty, had an effect on the number of invalidings and deaths. Excluding deaths due to a state of war, the death rate was 13.5 per 1,000, an increase of only 0.8 on 1914. The main causes of death were blackwater fever and malaria, but there was one death from yellow fever. The invaliding rate in that year was less than in the previous year. The military campaign in the Cameroons was brought to an end in the early part of 1916, and many officers returned to their ordinary duties. The death rate declined to 11.8 (the same as in 1913); this rate included war casualties; if they be excluded the rate becomes 10.3 per 1,000. The death rate from disease was 8.5 per 1,000, as compared with 11.6 in 1915 and 10.5 in 1914. There was again one death from yellow fever. There were 5 deaths from blackwater fever, but only one from malaria. These good results were not maintained in 1917. The normal staff arrangements were disturbed by the dispatch of large forces from the West African colonies to East Africa, and among the officers of the force were many civil officials. The work thrown on the remaining staff, already greatly depleted, was therefore much increased and leave had to be stopped. The result of these conditions and the attendant restrictions, privations and discomforts, due to war, was shown in the death rate, which rose to 50.6 per 1,000; part of this high rate was accounted for by officers drowned through the act of enemy submarines, and others killed or dying on active service. The sinking of three vessels by enemy action involved the death of forty West African officials, and twenty-three were lost in another vessel, the foundering of which could not be traced definitely to enemy action; 26 officers were killed on active service, 2 died of wounds, and 4 from disease while with the force. Excluding these deaths directly due to the war, the rate is 14.4 per 1,000, a considerable increase on the rate for 1916. In this year there were 7 deaths due to blackwater fever, 6 to malarial fever, and 7 to yellow fever. The armistice came too late in 1918 materially to affect the adverse conditions. The death-rate from conditions other than those directly due to the war rose to 16.5 per 1,000, as against 14.4 in 1917. The rise is attributed entirely to the ravages of influenza and its complications. The epidemic which swept over the world in the last few months of 1918 did not spare West Africa; it caused 27 deaths out of a total of 41 excluding direct war losses, and thus in itself produced a death rate of 10.9 per 1,000. The rate, however, was much lower than in England and Wales for the corresponding period. On the whole, we gather that the writer of these reports is hopeful for the future.

PLANT RESPONSE.

SIR JAGADIS BOSE, C.I.E., C.S.I., F.R.S.(elect), gave a lecture on March 11th, at the Royal Society of Medicine, on plant and animal response, founded on researches carried out at the Bose Research Institute, Calcutta. The lecture was illustrated by a demonstration on the magnetic crescograph, and the lecturer mentioned that he had devised an apparatus to record the movements of a "praying palm" in Bengal, which was stated to prostrate itself at the hours of prayer; the tracing obtained showed that the effect was purely one of reaction to temperature and to light. Plants could perceive changes in environment to an unsuspected extent. Once in his laboratory the reaction of a plant to the customary stimulus became momentarily feeble, and he found that the cause was a small cloud passing across the sun. Automatic records led him to the conclusion that the vitality of a plant was lowered by the introduction of carbonic acid in its vicinity. One Indian plant, the *Desmodium gyrano*, had leaflets which went on beating like the cardiac muscle, and this plant was made to record its pulsations. On the introduction of ether the pulsations were arrested; in fact, the reactions to drugs were exactly parallel to those in the human and animal heart. Coming to his experiments on growth, the lecturer said that his magnetic crescograph magnified ten million times, so that a rate of growth infinitesimally slow was represented on a lantern screen by a spot of light moving at a fair speed. He demonstrated such movements and their acceleration or retardation by drugs and chemical agents and also by the application of electricity. An electric spark caused the spot of light to stop in its passage and quickly retreat, showing that the first effect of the electricity was to induce retardation of growth. The effect of drugs or chemical agents depended entirely on the strength of the dose; a stimulating agent given in excess produced a great depression, while a depressant in very slight quantities provoked advance. The lecturer believed that nervous impulse in plants was not single but dual, and that the first effect, relaxation, was followed by contraction. He thought it possible that nervous impulse in animals presented the same dual picture, but that this duality had been obscured because the first phase was fleeting. He also said that plants gave responses to wireless signals. Professor Augustus Waller, F.R.S., in proposing a vote of thanks to the lecturer, said that ten million times magnification meant that a human blood corpuscle, magnified on the same scale, would have a diameter of 70 metres. It was movements of this order which Sir Jagadis Bose had shown, and, of course, errors would be magnified in the same proportion. The behaviour of the spot of light threw some doubt on the results. Application of electrical stimulus should have meant arrest and subsequent increase of growth; instead of that, the spot of light went violently backwards, showing that there was the reverse of growth. He would like the experiments to be repeated on non-living matter, for he believed that the same phenomenon might then be seen. The explanation of the contractility of plants—the phenomenon which Sir Jagadis Bose had announced—might be entirely the heating effects upon a tissue. He invited the lecturer to repeat the experiments under laboratory conditions here. Sir Jagadis Bose, in reply, said that these experiments had been tested under laboratory conditions by Professors Starling and Bayliss and other British physiologists.

AN UNRECOGNIZED FACTOR IN RELIEF VISION.

WHEN a group of objects occupies the whole of the visual field the contours of the objects situated at the periphery produce on the retina slightly distorted images, and the image of a straight line in these circumstances forms a segment of a hyperbola. We recall the chess-board experiment of von Helmholtz. The marginal distortion is due to the fact that the refractive media of the human eye do not constitute a perfectly rectilinear objective; if, nevertheless, the complete image of the visual field is sharp it is due to the structure of the fundus of the eye, the concave surface of the retina occupying almost exactly the focal volume of the refracting apparatus. If an object is gradually approaching the observer's eye it occupies a portion of the visual field all the greater as it comes closer, and the image formed on the retina similarly increases, but, at the same time, the distortion of the image will increase in inverse ratio to the distance of the object. Pech[1] holds that, owing to the progressive visual education we undergo from birth, this distortion of images is used by us to locate an object in space and that it constitutes a factor in relief vision not hitherto appreciated. He founds this opinion on the fact that a photographic image viewed with a certain distortion gives the impression of actual relief, and he cites two experiments to support this. A photograph examined by reflection in a concave mirror of 80 cm. to 1 metre

[1] *C. R. de la Soc. Biologie*. lxxxiii. No. 7, 1920.

focus is seen in relief, and the eye of the observer does not notice that the peripheral portions are distorted. Again, when a photograph is projected on to a properly calculated concave screen, which can be prepared by stretching the cloth over a framework the sides of which are segments of hyperbolae instead of being rectilinear, we are able to appreciate the third dimension, a thing which is not possible with a flat screen. Further, in the previous experiment the observer is not conscious of the disturbing distortion. Pech believes that these facts are sufficient to allow of the conclusion that the retinal distortion of images is a factor in relief vision. The sense of relief experienced in these experiments is a real relief, and it is not so evident as stereoscopic relief. The latter is particularly vivid because it surprises us, seeing that in ordinary life we are not accustomed to see a series of flat objects totally distinct from one another as the stereoscope shows us. With the stereoscope the appreciation of relief fails when the objects are not in the foremost planes but this is not experienced in normal vision.

THE CAVELL MONUMENT.

THE memorial to Nurse Edith Cavell, looking down from the junction of Charing Cross Road and St. Martin's Lane on to Trafalgar Square, was unveiled by Queen Alexandra on Wednesday, March 17th. The monument which Sir George Frampton, R.A., has conceived and executed as a labour of love, is a very fine conception. On the top of a narrow pyramid in grey granite is a symbolic seated figure of Humanity resting on the cross and with a child on her lap. Projecting from the base on the southern side is a white marble statue of Miss Cavell in nurse's costume, with the inscription "Edith Cavell, Brussels, Dawn, October 12th, 1915." Above, at the foot of the statue of Humanity, are the words "For King and Country"; on the west side "Devotion"; on the north, which at the base bears a bas-relief of the lion of Belgium, "Fortitude"; and on the east, the word "Sacrifice." The monument is a distinct addition to the amenities of London, and Sir George Frampton in conceiving it has set an example to other sculptors. His own work harmonizes well with the surrounding buildings, with the spire of St. Martin's on the east, and the tower of the National Portrait Gallery on the west. Lord Burnham, addressing Queen Alexandra, said that the statue had been erected out of funds subscribed by all classes of the community. A large number of those who had sent the money were on active service in the navy or army, and certain sums also had come from across the Channel. One of the flags draping the statue had, he said, been presented by Queen Alexandra and the other by the Queen of the Belgians. Queen Alexandra handed a written reply to Lord Burnham in which she said: "The countless thousands who will pass this spot in our time and in future generations will think with sorrow of her cruel death, with pride of her splendid fortitude, and with affection of her unselfish and womanly character." The Bishop of London dedicated the statue to the glory of God and the immortal memory of Edith Cavell. "May it remind our countrymen and country-women of her splendid patriotism, and of her last words, that patriotism was not enough." Sir George Frampton handed the cord to the Queen, who unveiled the statue, and buglers sounded the "Last Post" and drummers the "Reveille."

PROFESSOR TUFFIER, whose appointment to be an Honorary Knight Commander of the Order of the British Empire we announced a few weeks ago, asks us to express his appreciation and thanks to members of the British medical profession who have congratulated him upon the high distinction His Majesty King George has conferred upon him, by which he feels greatly honoured.

Medical Notes in Parliament.

The Estimates.

THE papers giving the Navy Estimates and a Vote on Account for the Civil Service and Revenue Departments were issued on March 13th. In round numbers the Estimates for 1920–21 reach nearly £1,200,000,000. Of this amount the Military Forces (Army, Navy, and Air) account for £230,000,000, interest on the National Debt £400,000,000, and Civil Service and Revenue £557,000,000. The estimate for the Military Forces alone exceeds the total estimate submitted for all national services in the spring of 1914. The total vote for the Medical Services, R.N., is £692,000. Of this amount salaries and allowances account for £122,000 (a decrease of about £8,000), and hospital and infirmary provisions and stores, medicines and instruments, for £278,000. Details of the Army Estimates have not been published. We gave on February 28th, p. 312, an abstract of the War Secretary's statement with regard to the strength of the Medical Corps.

The estimate for the Ministry of Health (England and Wales) is 27½ millions, for the Scottish Board of Health nearly 4 millions.

Supplementary Civil Service estimates for the year ending March 31st, 1920, have also been issued; they show a total of 28½ millions. Included in this total is a sum of £148,500 for the Medical Research Fund, the original estimate was £60,000. The additional £88,500 is made up as follows: Additional grant to meet the cost of investigation in connexion with industrial fatigue, etc., £16,000; cost of radium to be taken over at a valuation from the Ministry of Munitions Disposal Board, £72,500; the radium will be used by the Medical Research Committee for research work. From April 1st the Committee will become the Medical Research Council, and will work under the direction of a ministerial committee of the Privy Council. The vote for next year may be expected to show a grant of larger amount to the new Council. There is also a supplementary estimate for the Ministry of Health, including an additional sum of £130,000 for child welfare, and of £650,000 for medical benefit in England and Wales. This sum is to meet the payment to insurance practitioners from January 1st of the capitation fee of 11s., the extra payment to practitioners in rural and semi-rural districts, and the payment to persons supplying drugs and appliances.

Training of the Blind.

There was a short debate on March 12th on the second reading of the Blind (Education, Employment, and Maintenance) Bill, which is identical with one introduced last session by Mr. Stephen Walsh, who for some time was Parliamentary Secretary to the Local Government Board, and was chairman of a committee which investigated the conditions of the blind. The second reading was now moved by Mr. Ben Tillett, who read the memorandum of the bill, which explained that its object was "to provide for the technical education of the blind by the establishment and equipment of technical schools where necessary, or by contributions to existing schools and institutions for the employment of the blind by the establishment and equipment of workshops where necessary; or by contributions to existing institutions providing work for the blind; for grants in respect of augmentation of wages earned by persons so employed; for the provision of the expenses of blind persons at institutions or hostels while under technical instruction; for the employment and maintenance of blind persons away from workshops, and for the maintenance of blind persons incapacitated from earning their livelihood."

Mr. Tillett said that of the 30,000 dependent blind persons in the United Kingdom 10,000 were supported by the Poor Law, 7,000 were more or less industrially employed, and 2,000 directly industrially employed. Their efficiency would be anything between 35 and 50 per cent. of the efficiency of the normal person. That efficiency depended not only on aptitude but on technical instruction. The Report of the Royal Commission on Venereal Diseases stated that maternal gonorrhoea not properly treated caused as much as 25 per cent. of blindness. The 30,000 necessitous persons represented only a part of the evil of defective sight. The bill did not interfere with any form of voluntary aid, but asked of those who accepted State assistance to recognize the controlling supervisory right of a National Advisory Committee.

Mr. Stephen Walsh, seconding the motion, said he was quite conscious there was at the Ministry of Health a very fine advisory committee, representing the blind in every capacity. In the course of the discussion Mr. T. Sugden pointed out that the prenatal blindness and blindness at birth were not included in the scope of the bill, and expressed the hope that some facilities for dealing with these matters might be afforded in Committee. Sir Frederick Banbury objected to the definition of the word "blind" as too comprehensive. There was no provision for a certificate by a doctor and no appeal on behalf of the ratepayer.

Dr. Addison, in the course of his reply, said that 21 per cent. of the blind were blind within six months of birth, owing to venereal infection which was preventable. That was one justification for the vote the other night for better training of nurses, midwives, and others, to attend on the newly-born child. There were other preventable causes of blindness. Next in importance were those relating to industrial accidents, but the information available was insufficient. He would adopt Mr. Tillett's suggestion for a comprehensive inquiry of a scientific character into the causes and prevention of blindness. The Government desired that the bill should give power to require the registration of agencies appealing for support of a voluntary character for the blind, so as to make sure that the sympathies of the public were not exploited by agencies unworthy of support. It would not be necessary for every authority to set up a separate organization or workshop for the blind; authorities should combine for that purpose. After going into the matter carefully it appeared to him that blind persons after the age of 50 could not be taught anything. The Government proposed therefore to give a special form of relief at the age of 50 for those who were blind and not able to support themselves. The machinery of old age pensions would be used so that any blind person between the ages of 50 and 70, subject to the same disqualification as to income and so forth, should receive the same benefits and weekly allowances as old age pensioners got. That would meet the case of about 46 per cent. of the blind who were indigent and too old to be taught anything. On behalf of the Government he promised either to re-form this bill or to introduce another to give effect to the proposals of the Government.

The Future of Poor Law Infirmaries.—Lieut.-Colonel Fremantle asked, on March 10th, whether the legislation necessary before the Minister of Health could decide the future utilization of Poor Law infirmaries was to be expected this session; and, if not, whether he would give such definite advice to boards of guardians as would enable them to make the institutional provision urgently required for tuberculous persons without incurring expenditure on accommodation which might be unsuitable for its ultimate purpose. Dr. Addison said he was unable to say when the legislation referred to would be introduced. It was not the policy of the Government to encourage boards of guardians to make additional provision for tuberculous persons. He was pressing upon the public health authorities the need for providing further institutional accommodation for these cases with the aid of substantial financial assistance from the Exchequer. Lieut.-Colonel Fremantle inquired if this did not mean a large amount of institutional provision that might be superfluous when there were Poor Law institutions available and suitable. Dr. Addison replied that he did not think so; as a matter of fact, there were several thousand beds short.

Bovine Tuberculosis.—Sir A. Boscawen, Secretary to the Ministry of Agriculture, stated, in reply to Lieut.-Colonel Fremantle, on March 15th, that the Tuberculosis Order of 1913 as to herds would come into operation, either in its present form or slightly amended, at the same time as the Milk and Dairies Act. The proposal to employ whole-time veterinary surgeons was one which presented serious difficulties. The Ministries of Health and Agriculture were acting in close co-operation, and the possibility of introducing a system whereby herds might be guaranteed free from tuberculosis was under consideration.

Venereal Disease Treatment Records.—Dr. Addison, on March 10th, said, in answer to Mr. J. Davison, that arrangements had duly been made for the keeping of records regarding the treatment centres for venereal diseases, established partly or wholly at the public expense. The number of cases dealt with for the first time at these centres between January 1st, 1917, when the first treatment centres were opened, and December 31st, 1919, was approximately 175,000. The approximate expenditure of local authorities on these schemes during the years ended March 31st, 1917, 1918, and 1919, amounted to £18,000, £116,000, and £216,000 respectively. The estimated expenditure during the current financial year was £314,000. Of this expenditure, 75 per cent. was borne by national funds and 25 per cent. by local funds.

Rabies Muzzling Order.—Sir A. Boscawen informed Captain Tudor Rees that the last case of rabies in this country occurred in Surrey on February 18th. The Muzzling Orders were in force in six different parts of the country. Owing to the long incubation period sometimes observed in rabies it was not considered safe to free a muzzling area within a period of from six to eight months from the date of the confirmation of the last case.

Small-pox in Poplar.—In reply to a question by Mr. Will Thorne (Plaistow), on March 11th, Dr. Addison said that though the Poplar cleansing station was within the same grounds as the disinfecting station, children sent there entered by a different door, and all necessary precautions were observed. It was, he said, the case that a man employed as the driver of the disinfecting van, whose duties took him to the house of a person who had been removed suffering from small-pox, had developed that disease. The man had refused to be vaccinated. In reply to suggestions by Mr. Thorne and Mr. J. Jones (Silvertown), Dr. Addison said that he had no authority to direct the payment of compensation to the parents of children who might contract small-pox. He could not undertake to introduce legislation providing that any person contracting an infectious or contagious disease through the neglect of any individual, or any body of persons or any Government department, should be entitled to compensation on similar lines to those which enabled the workman to receive compensation for contracting a disease in the course of his employment.

Criminal Law Amendment Bills.—A bill introduced in the House of Lords, on March 16th, by the Bishop of London, to amend the Criminal Law Acts was at the request of the Government read a second time and referred to a Joint Select Committee of both Houses, to which also will be submitted the Government Bill of 1918, shortly to be reintroduced, and Lord Beauchamp's bill. The Bishop of London proposed in his measure that the age of consent as a defence should be raised to 18, and there were in it several other provisions materially to strengthen the law.

The Restriction of Child Labour.—Major Baird (Under Secretary for the Home Office) stated, on March 10th, in answer to Mr. Short, that the International Labour Conference at Washington had adopted a draft convention to provide that children under 14 should not be employed in any industrial undertaking other than undertakings in which only members of the same family were employed. Special provisions were inserted in regard to the application of the convention to India and Japan.

Veterinary Surgeons Act Amendment Bill.—Sir Watson Cheyne, on March 11th, moved the second reading of a bill the main objects of which were to enable the Royal College of Veterinary Surgeons to charge diplomates an annual fee, and to give power to prohibit bodies of unqualified persons from forming themselves into a veterinary dispensary or hospital, a proceeding which was legal under the existing Act and lent colour to the idea that they were qualified. Another clause rendered it penal for any veterinary surgeon to employ an unregistered practitioner. The bill was opposed by Brigadier-General Colvin and Mr. Jodrell. It was supported by Sir Henry Craik and Lieut.-Colonel Raw. The closure was carried by 106 to 51 and the bill read a second time.

Pre-War Pensions and the Cost of Living.—The Prime Minister, on March 11th, dealt with several questions arising out of the motion passed on February 25th, on a private member's resolution, in favour of increasing police pensions in order to meet the increased cost of living. The proposal was that pensions granted before April 1st, 1919, when new rates were given, should be raised. It was vigorously opposed by the Home Secretary, who intimated that the Government was prepared to consider hard cases, but could not go further, as the whole pension system of the Civil Service was really involved. Mr. Lloyd George now said that the Government had again carefully considered the subject, and could not depart from the decision that it would be most unjust to the general taxpayer to raise the pre-war pensions in accordance with the present scale. They had, however, appointed a committee to consider whether any steps could be taken to relieve exceptional cases of hardship due, for example, to age and infirmity.

Sanatoriums for Uncertifiable Mental Cases.—Mr. Rendall asked, on March 12th, what steps the Minister of Health proposed to take in regard to the provision of sanatoriums for uncertifiable mental cases, and whether, for the encouragement of voluntary patients, such homes should be kept on a hospital footing—namely, free from detention and wholly unconnected with lunacy administration, so as to prevent their being regarded as halfway houses to asylums. Dr. Addison said that any scheme on the lines suggested (with which he was entirely in sympathy) would require legislation. The question was under consideration, but he was not in a position to say when the necessary legislation would be introduced.

England and Wales.

Venereal Clinics in London.

At the meeting of the London County Council on March 16th it was reported that during 1919 the number of cases of venereal disease dealt with at the London hospitals under the scheme in which the Council is the chief participating authority was 27,364, and the total attendances at the clinics, 298,066.

The attendances represented an increase of 74 per cent. over the corresponding figures for 1918, which themselves showed an increase of 44 per cent. over the figures for 1917. The authorities participating in the scheme, in addition to the London County Council, were the councils of six adjacent counties and three adjacent county boroughs. It was estimated, however, that 75 per cent. of the cases came from the London area. The hospital authorities were making every effort to deal adequately with existing demands for treatment. The venereal clinic at St. Thomas's Hospital was the first to be opened in London daily and all day. The Royal Free Hospital was the first general hospital to make special provision for pregnant women suffering from venereal diseases. A medical home had been provided in Stockwell for the treatment and simultaneous education of children suffering from gonorrhoea. The Council was called upon to increase substantially the amount of grants for 1920-21. The grants to be made by all the participating authorities (London's share being 75 per cent. of the whole) would be £92,000 for treatment and pathological work at hospitals and £1,560 for hostels; the grants for the year just expiring amounted to £51,300. The reasons for the increase were: (1) the

large growth in the work of the clinics; (2) the increase in the cost of hospital maintenance; and (3) the probability that the increase in the work of the clinics would continue during the next twelve months at least, though not at the same rate as during the year 1919.

LEICESTER PUBLIC MEDICAL SERVICE.

The plan on which the Leicester Public Medical Service is conducted was described at the time of its foundation and its progress has been referred to in the JOURNAL on several occasions. The Board of Management in its report for 1919 records another successful year's work. The subscribers to the various sections of the service number upwards of 43,000, and in addition some 11,500 state insured members of friendly societies are paid for through the service. In consequence of changed conditions the Board felt obliged to revise the rates of contributions. The new scale came into force in July last, but special reduced rates are charged to subscribers in receipt of the old age pension and to those assisted by the guardians. The service undertakes free medical treatment to the uninsured blind of Leicester, and for this the committee of the Institution for the Welfare of the Blind has expressed its sincere gratitude. Free medical treatment is also provided for members of the Wycliffe Society for helping the blind and of the Cripples Guild. More than 189,000 prescriptions were dispensed during the year. By arrangement with the Education Committee the school clinic work is carried on at the central dispensary, where the Board is now equipping a pathological laboratory under Dr. T. C. Clare. At the annual meeting held recently a report was received also from the committee of the Leicester subdivision of the Union of Medical Practitioners, which made arrangements for giving medical attendance to patients of doctors absent on military service. A scheme for collective locumtenencies during the summer holidays was inaugurated last year and worked successfully; thirteen doctors took advantage of the facilities afforded by this scheme and twenty-six doctors attended patients for their absent colleagues. A scheme for collective locumtenencies during sickness or short absences was also arranged upon much the same lines.

MEDICAL WOMEN'S DINNER.

The past and present students and staff of the London (Royal Free Hospital) School of Medicine for Women held a reunion dinner, on March 12th, at the Abercorn Rooms, Liverpool Street, after an interval of six years. The chair was taken by Dr. May Thorne, in the absence of Miss Louisa Aldrich-Blake, M.S., Dean of the Medical School, who was laid up as the result of an accident. More than 300 were present, the guests including Sir Thomas and Lady Barlow, the Right Honourable F. D. Acland, M.P., Sir Cooper Perry, Sir Walter Fletcher, Dr. H. Morley Fletcher, Dr. Leonard Dudgeon, Professor F. G. Parsons, and Sir William Barrett. After the loyal toasts had been honoured, the Chairman expressed the regret of all the company at the absence of Miss Aldrich-Blake, and then in an admirable speech touched on the events of the past six years, paying a high tribute to the splendid work done in various theatres of war and at home by medical women trained at the Royal Free Hospital. The association of the hospital with the London School of Medicine for Women began in 1877. When no other hospital would look at women students the Royal Free placed its clinical resources at their disposal. Dr. May Thorne concluded by asking her hearers to support the new appeal fund. It is proposed to enlarge the hospital from the present 220 beds to 450, and to offer full facilities to women students for training, experience, and research. Of the beds 230 will be entirely free for the treatment of poor patients; the remainder it is proposed to set aside for persons of moderate means who can pay three guineas a week towards the expense of their maintenance whilst in hospital. The cost of the new buildings, equipment, and charges towards maintenance is estimated at £500,000. The land for the hospital extension and the nurses' and service quarters has already been given, and adjoins the present building. Land adjoining the present school in Hunter Street is available for the proposed school extension. The toast of the "Royal Free Hospital and London School of Medicine for Women," thus proposed by the chairman, was replied to in an amusing speech by Dr. Walter Carr, and by Miss S. T. Widdows, B.Sc., lecturer on chemistry, who described recent progress. Dr. Carr told of the student of the school, who was found nursing her baby, smoking a cigarette, and studying a textbook on surgery at one and the same time; he thought this typical of the modern spirit. The toast of the guests was proposed by Lady Barrett, physician for diseases of women to the Hospital, and was responded to by Sir Walter Fletcher, secretary of the Medical Research Committee, who in the course of his speech mentioned the anxiety felt at the grave illness of Sir Robert Morant. The dinner was in every way a great success, and illustrated the strong feeling of loyalty felt by students and staff for their hospital and medical school.

A FREEMASONS' PAYING HOSPITAL.

During the war the Freemasons' war hospitals were maintained by the craft. The committee has now decided to continue one of the hospitals for the benefit primarily of freemasons of limited means and members of their families. It is intended to be conducted on nursing home lines, and the charges will be based on the estimated cost of maintaining a bed in a general hospital of the first rank, which is put at about £3 to £3 5s. a week. The actual cost will be substantially more, and the craft is raising an endowment fund for this purpose. The adult wards will be arranged in semi-cubicles curtained off. The nursing staff will consist of fully trained nurses, each member nursing her own patients throughout. It is intended that the patients shall pay something towards the surgical expenses, and the surgeons on the visiting staff will be asked, while looking at the institution in the same way as they would regard an ordinary hospital, to consent to take from the committee small nominal contributions towards the surgical expenses. The premises are those formerly occupied by the Chelsea Hospital for Women, Fulham Road, Chelsea; they will be opened at the beginning of May. The committee may, we do not doubt, count upon members of the profession to give the necessary medical and surgical treatment at nominal fees as an act of generosity towards the poorer members of the craft—at any rate, while the institution is in the early stage of its work; but the principle is unsound economically, and will, we anticipate, eventually be replaced by some plan under which the members of the craft will take upon themselves a full share of the whole cost of the hospital, and not place upon the medical profession a burden greater than is borne by other classes of the community.

Correspondence.

THE PHYSICAL BASIS OF MENTAL DISORDERS.

SIR,—At the present time the psychogenetic conception of mental disorders, or at all events that large section termed the psycho-neuroses, practically holds the field. Psychogenesis implies, I take it, the origin of mental disorders in the mind, the body only becoming affected secondarily, although I observe that Dr. Bernard Hart's definition in respect to the psycho-neuroses is that it implies merely predominance of psychical factors.

The followers of the psychogenetic doctrines employ "psychotherapy" in some form or another as a curative agent—that is, they claim to cure mental disorders by mental means. No one would wish to dispute the good results obtained in the psycho-neuroses by these methods; but it is permissible to dispute their interpretation of its action. Equally good results are obtained by diametrically opposed "psychological" methods. One practises the repression of the painful ideas into the unconscious and substituting pleasant ideas; another the dragging of the painful impressions into the full light of consciousness and endeavouring to incorporate them in a modified or altered form into the conscious part of the ego.

Waller has recently shown that by speech one can influence the metabolism of the cells, and show graphically alterations in the electrical resistance of the body. Some speech leaves the subject unaffected, whilst that which evokes strong emotion produces marked effects. This is a biological phenomenon. In a similar way it may be that "psychotherapy" is really biological and not psychical. By this procedure certain sensory end organs, chiefly auditory, are stimulated, and nervous impulses from this centre react on the chief controlling station for the

endocrine glands. In this way it might be possible for an imperfect equilibrium between these organs, the result of shock or other cause, to be rectified. The effects of thyroid extract in certain cretinoid forms of insanity show the marvellous influence this internal secretory gland has on the mind. By its administration we can transform a mindless, repulsive, helpless child into an active, industrious, and fairly intelligent being; we have in fact by purely physical means put a mind into the child.

Some years ago, in the *Journal of Mental Science*, I gave an account of the pathological appearances found in the brain, kidneys, liver, and blood vessels of the insane. The results showed in what a large proportion changes, chiefly of a degenerative character, or evidence of lack of normal development occur in insane cases, even among the young and recently insane. It seems to me now, however, that it will be by a study of endocrinology that most promise of acquiring satisfactory evidence in support of the physical basis of insanity will be forthcoming.

Whether the psycho-neuroses are primarily psychical or physical in origin may seem merely of academic interest, but in my opinion there has been a tendency, especially among asylum medical officers, to study the psychological aspect of the question to the neglect of the biological. If I am correct in this, more than an academic interest is attached to the question if it may help to counteract this tendency.

Recently, however, the physical side of the question seems to have received more notice, even by the psychogenetic school, and Bernard Hart,[1] one of its ablest advocates, suggests that the causes now called psychical may ultimately be capable of expression in anatomical and physiological language. His attitude is "that in the present state of our knowledge we can express processes in psychological terms, and explain them by psychological laws, much more profitably than by the conceptions of anatomy and physiology."

The work of Pavlov on conditioned reflexes in the brain may open the door for a physical explanation of many phenomena now regarded as psychical.—I am, etc.,

JOHN TURNER.

The Mental Hospital, Brentwood, March 10th.

APPENDICECTOMY BY A NEW ROUTE.

SIR,—The title of Mr. Whitelocke's paper (February 14th, p. 211) aroused my curiosity, and I wondered what could be the "new route" that the ingenuity of the surgeon had devised for attacking the appendix. Great was my surprise, as I see the paper was read before the Surgical Section of the Royal Society of Medicine, to find that the new route was a slight—very slight—variation of the well known McBurney's operation.

Personally I fail to grasp wherein lies the claim that Mr. Whitelocke advances. The only difference I can detect is that the incision is placed perhaps half an inch higher on the abdominal wall, and perhaps half to one inch nearer to the anterior superior iliac spine. The structures divided and separated are precisely the same as in McBurney's operation, and I have no doubt that surgeons who have employed McBurney's method have on many occasions unwittingly performed the operation by the "new route," in that the incision has not been placed exactly in McBurney's line, but somewhat nearer the anterior iliac spine.

The essential feature of Mr. Whitelocke's operation, as of McBurney's, is the muscle splitting, and in this, as far as I can see, the two operations are exactly the same. As in McBurney's operation, it is necessary, in order to obtain enough room, to separate the internal oblique and transversalis muscles as far outwards as possible.

That the appendix can be removed without opening the general peritoneal cavity is doubtless true in rare instances, but it is also true that in the vast majority of cases, by whatever method of operation, the general peritoneal cavity is opened, and this is a strong argument in favour of the more surgical procedure of deliberately opening it before proceeding to search for the appendix, since, if any risk is entailed, it can be guarded against by packing, while if we delude ourselves with the notion that the general peritoneal cavity has not been encroached upon, the risk is obviously greater.—I am, etc.,

London, W., Feb. 23rd. DOUGLAS DREW.

[1] BRITISH MEDICAL JOURNAL, February 14th, 1920.

THE TREATMENT OF UTERINE CANCER.

SIR,—The closing paragraphs of the leading article on tumours complicating pregnancy make one sad. It is to be hoped that they do not reflect the views of many gynaecologists. The writer, in calling attention to Dr. Herbert Spencer's statement that he had cured three cases of cancer of the cervix by high amputation, says that "these results must give us reason to pause and think." Surely no other conclusion can be drawn than that the operator was extremely lucky, and though it is but natural that a surgeon should attach undue importance to such fortuitous results, yet no one can guess what the effectiveness of the technique may be unless he knows the relative proportion of the successes to the failures. A very restricted operation is bound occasionally—but only by sheer luck—to remove the whole of the morbid process. The crucial test of any operative or other procedure in cancer must be: How many cases has the operator seen, and how many of these are alive and well, say, five years afterwards?

In the second place the article states that "throughout all gynaecological literature there is apparent a feeling almost of despair as to the powers of surgery in dealing with this particular form of cancer," and this is apparently the outcome of "the hopes based on the technique of Professor Wertheim." While Wertheim must be given a certain amount of credit in stimulating gynaecologists to improve the extent of their operative measures his technique was far from being the last word on the subject, and the way in which he went back on his original position showed that he never quite appreciated the lessons of the surgical pathology of cancer in general. There are gynaecological surgeons in this country to day who do a much more thorough and scientific operation than ever Wertheim contemplated; they do not exclude so many cases, their operative mortality is lower, and their ultimate results are better.

Thirdly, "a note of fresh and confident hope" is detected in recent reports from America with regard to radium treatment. The same note may also be detected in recent French and other foreign journals, but it is altogether unconvincing. In this country we got over that rather hysterical "note" before the war. When the believers in the therapeutic marvels of radium in cancer can produce good pathological evidence of the malignant nature of the lesion before such treatment, and can produce the cured patient alive a few years afterwards, even in a minute proportion of cases, then those of us who are apt to allow our views of such cures to be biassed by the results of our *post-mortem* examinations upon them will become more credulous.—I am, etc.,

ARCHIBALD LEITCH.

Pathological Laboratory,
The Cancer Hospital, S.W., March 18th.

EARLY DIAGNOSIS OF SYPHILIS.

SIR,—Dr. E. Harrison, in the course of an address to the members of the East Riding Division of the British Medical Association, stated (BRITISH MEDICAL JOURNAL, March 13th, p. 364) that "from his experience at the clinic [in Hull] chancroid pure and simple was a rare condition; nearly always there was syphilis at the back of it."

Whilst admitting that it is never safe to exclude the possibility of syphilis in the case of a chancroid, and that it is necessary to keep these cases under observation for at least three months, one is only prepared to accept the former statement providing the *S. pallida* has been found in the living state by dark-ground illumination. On the other hand, if Dr. Harrison's results are based on the detection of *S. pallida* by means of staining reagents, such as the Fontana method, an erroneous conclusion may be arrived at owing to the extreme difficulty in detecting the *S. pallida*, which has a notable lack of affinity for most staining reagents, and the ease by which other spironemes resembling it are found.—I am, etc.,

A. BRYANS,

March 15th. Medical Officer, Middlesbrough Treatment Centre.

PUBLIC HEALTH VERSUS THE STATE.

SIR,—It seems to me that when Dr. Baskett's theory is applied to the National Insurance Act it will not hold water.

Few will deny that prior to the passing of this Act there

were large numbers of persons who made no attempt, and not through inability, to put a little bit by in case of misfortune. They belonged to neither a friendly society, sick and draw club, nor other provident institution. Illness came, throwing the breadwinner on his back, and consequently there was nothing coming in.

The sick man and his dependants were saved from starvation by parish relief and charity. It was surely in part to mitigate the dismal results of such improvidence that the Insurance Act was evolved, forcing the spendthrift to make at any rate some slight provision for a rainy day, thereby lessening the degree of privation which not only he himself but also those relying on him for support might be called upon to bear in case of disability. As Britishers we inherently loathe and detest State interference and compulsion, and let us pray we may have no more of it than dire necessity compels.—I am, etc.,

H. W. FREER, M.R.C.S.Eng., L.R.C.P.Lond.

Colwyn Bay, March 14th.

SIR,—Dr. Davies agrees that poverty has been a chief factor in the past in tuberculous mortality, and that real wages have fallen since 1896—that is, that poverty has increased. He claims that many lives have been saved by paternalism; yet the death rate has risen. It follows that the seen good has been over-compensated by unseen harm.

That is my case. You can, we admit, shift a molehill by mining it with a ton of dynamite; what we say, and prove, is that you do not improve the level of your field. It is incumbent on his school to prove that poverty has other effects than it used to have. To talk of infection is to side-track; no more than poverty can it change its rôle; and while we knew nothing of infectivity the rate fell merrily. It is since we knew, and since we took precautions, that it has risen.

The individualist preaches self-reliance first, last, and all the time. Necessarily he approves of voluntary insurance; necessarily he disapproves of the Act, for it is hostile thereto. The principle is happily inveterate in England. It survived, with much scathing, the Compensation Act; it survives to-day. But the Act is doing its best to kill it.

There is a fallacy in his suggestion that voluntaryism diminishes real wages. It diminishes a man's wages, doubtless, to pay out 6d. a week for insurance. But it does not diminish, it raises, the wage rate of a class which does so. A very simple test will demonstrate this fact. He will allow that the standard of living of a class is the ultimate standard of its wage rate. If the employee class decides to provide for itself, its standard of living is surely raised. If you force an employer to provide for his employee, whose standard is raised? Clearly not the employee's. You have forced the two classes into the position of the feudal baron and his retainer. Incidentally you have killed, by your compulsion, the kindly feeling of the one and the devotion of the other which were the redeeming feature of a degraded condition.

At first, at any rate (for in the long run compulsion must have its debasing influence), we may disregard the direct contribution. But the employers' and the State's contributions are a heavy burden on the persons to whom they are "given." If Dr. Davies marks the rise of large incomes up to 1914, by the side of the increased taxes and the fall of real wages, he will be driven to allow that, short of the point at which all are crushed, while taxation infallibly impoverishes the poor, it actually enriches the very rich. The plain fact is that heavy taxation must raise the rate of interest.

My views on government and its problems, for which he asks, are not relevant here: I have already urged that, especially in the matter of housing, paternalism has done great harm. This I may say to the point, that many educated men are weary of the incessant legislative tinkering, always involving retinkering, at these problems; they have so often had high hopes raised only to be baffled, and, as here, mocked, that their prayer has come to be "let us alone." Can Dr. Davies have already forgotten that only eight years ago the Insurance Act was to deal the *coup de grâce* to tubercle?

If he fails to see why a State scheme must necessarily be bad, after his own statements, I would urge him to read the scathing indictments of the German Act, published just before our own was passed, by its president and vice-president on their retirement.

It is odd that I who have spent so much time in trying to prove that the problem is too complex for a centralized agency should be reproached for treating the question as a simple one. My one desire is to define the function of the State therein. That is simple, as I believe. For fifty years it concentrated on national resistance and left treatment to individuals. That policy was a brilliant success. Later it has concentrated on treatment by a method which must lower national resistance, and left the question of resistance to individuals. As Dr. Davies has to acknowledge, the sequel is dismal.

Is the relation causal or coincidental? The question was important before; it is frightfully, tragically insistent now, with the awful prospect before us for at least a generation. If it is causal, then the man who spends more public money is an enemy to the public health. The principle underlying the Act is the principle of the thousand delirious schemes of "reconstruction." By insisting on an inquiry which shall exonerate, or establish the guilt of, the principle of the Act, medical men can do an untold service to their country.—I am, etc.,

Rayleigh, Essex, March 14th. B. G. M. BASKETT.

THE TERRITORIAL FORCE.

SIR,—May I summarize six points (there are others) of inequality in the treatment of the medical officers of the Territorial Force during the recent war?

1. Pay was the same as for Regulars, but theirs is supposed to allow for a retiring (as against only a disablement) pension.

2. Pay even with allowances was less than that of temporary M.O.s.

3. Whereas a temporary M.O. could go on leave, or remain in hospital as a casualty for years, without the loss of a farthing, the unfortunate Territorial (and his family) had nothing but his bare pay (and 1s. 2d. food allowance on leave) on such occasions.

4. A temporary M.O. on a hospital ship had full pay and all found. A Territorial had pay and no allowances.

5. A temporary officer could invest or use his gratuity every year.

6. A temporary officer got "contract" leave, no matter what "sträfe" might be on — and he got ordinary leave, too.

Compared with many I suffered little. I joined up through the T.F. as by a back door, being unable to pass the (1914) physical tests for temporary commissions. But I learned one lesson thoroughly: Believe nothing the War Office tell you, even if they give it you in writing, and wait till "an emergency arises." Neither the nation nor you will lose by it. The Regular R.A.M.C. are more than able to provide the inevitable red tape.—I am, etc.,

March 10th. A TERRITORIAL MALGRÉ LUI.

SIR,—I have been much struck by the remarks of "Hard Hit" and others. Since 1907 I have given time, money, and energy towards qualifying myself to be of service to the country in an emergency. I was mobilized on August 4th while in camp—that is, without half an hour's notice—and served till the spring of 1919.

My honest advice with regard to the T.F. and S.R. is (1) if you are in either, get out as soon as you can; (2) if you are in neither, stop out; (3) when the next emergency arises, wait till you are forced into the service.

By following these simple rules one will achieve the following advantages: (*a*) Increased leisure in peace time; (*b*) in war time, avoidance of being suddenly torn from practice; (*c*) more pay than the patriotic idiot; (*d*) probably higher rank, safer and more congenial work; (*e*) preferential recognition and earlier release from service.

I see that the Territorial Medal, a recognition of patriotism that would cost the Government 2s. 6d. but which would be valued much more, is not to be given with the 1914–1915 Stars—a regulation which bars 95 per cent. of those otherwise eligible.—I am, etc.,

March 11th. "QUOTH THE RAVEN."

THE INDIAN MEDICAL SERVICE.

SIR,—In the letter by "I.M.S. Retired" (February 28th, p. 307) we have at last come to actual facts, and concrete examples of the financial position of members of the I.M.S. Your correspondent wisely strengthens his case by

deliberately under-estimating expenses in India. If those interested will refer the question to anyone with experience of the present cost of living in India they will find that 20 per cent. may fairly be added to "I.M.S. Retired's" estimate without exaggerating the case.

The comparative table given in the letter showing rates of pay of Indian Army, Supply and Transport, and I.M.S. is clear and decisive. I think that still more light can be thrown on the position of the I.M.S. officer by amplifying in the same way the comparison between the Education and Forest services and the I.M.S., and in the table I give the present rates of pay of these three services in each year of service from one to twenty years.

Comparative Rates of Pay (Monthly), Indian Education, Forest, and Medical Services.

Year of Service.	Education Service.	Forest Service.	I.M.S.
	Rupees.	Rupees.	Rupees.
1st	550	450	550
2nd	600	500	550
3rd	650	550	550
4th	700	600	700
5th	750	650	700
6th	800	700	750
7th	850	750	750
8th	900	800	800
9th	1,000	850	800
10th	1,050	1 000	800
11th	1,100	1,050	900
12th	1,150	1,100	900
13th	1,200	1,150	1,000
14th	1,250	1,200	1,000
15th	1,250	1,250	1,000
16th	1,300	1,300	1,150
17th	1,350	1,350	1,150
18th	1,400	1,400	1,150
19th	1,450	1,450	1,150
20th	1,500	1,500	1,150
	20,800	19,600	17,500
Total pay received in 20 years' service	249,600	235,200	210,000

The totals of each column prove that after twenty years' service the I.M.S. officer, who has had the longest and most expensive education, has received Rs. 39,600 less than the Education officer, and Rs. 25,200 less than the Forest officer.

The system of increase by annual increments is the most equitable, and might be applied with advantage to the I.M.S.—I am, etc.,

March 3rd. INTERESTED.

CO-OPERATION BETWEEN HOSPITALS.

SIR,—The hospitals of the country require organizing properly. That may be a defect inherent in a voluntary individualistic system. Each is inclined to go its own way, and would probably resent any interference from others. Each hospital board has its own pet charity to administer to its own self-righteous way. The road to Heaven is paved with donations and annual subscriptions. At present there is reliance upon the Red Cross to stave off the nationalization of hospitals. It means an orgy of begging. It is possible that a great deal more can be done by co-operation between hospitals, both as to getting the money and, the importance of which is hardly realized, increasing their efficiency.

We have a Hospitals Association, but it is as if this country were governed only by the national Parliament, and there were no county, borough, or parish councils. There is a great need of decentralization. In Lancashire and Cheshire there are about 12 teaching hospitals, about 13 special and teaching hospitals, about 18 hospitals with between 100 and 200 beds, about 6 hospitals with between 50 and 100 beds, about 21 with under 50 beds.

Now, there is practically no co-operation between these hospitals. How much might be accomplished by co-operation between these hospitals, between their boards of management, and also between their medical and surgical staffs! The teaching hospitals are the great centres of efficiency, new ideas, and new knowledge. We need some means by which these may be rapidly brought to all the other hospitals in their sphere of influence. There is a lack of connecting links or liaison officers. If there was a provincial council of representatives from the boards of management of the hospitals in Lancashire and Cheshire, it might deal with such questions as the raising of funds, private wards, payment of medical staffs, equipment, training and payment of nurses, and almoners or some other system to decide what patients should make part payments towards their treatment and keep, and what patients were fit subjects for free treatment.

Then there should be a council composed of representatives of the medical staffs, to consider new methods of treatment, for what cases they should receive remuneration, and how to make their hospitals as efficient as possible. It is possible that the liaison officers might be got from the consulting medical officers or that the assistant surgeons and physicians of the teaching hospitals might be attached as consultants to the other classes of hospitals. Co-operation of this kind would make post-graduate teaching easier, because the great need now is to bring the post-graduate to the doors of the busy general practitioners. Anyhow something on these lines has got to be done, and if it were well done 'twere well 'twere done quickly.—I am, etc.,

Wigan, March 8th. FERDINAND REES, M.D.

PROPOSAL FOR A MEMORIAL TO SIR VICTOR HORSLEY.

SIR,—I am now not in the habit of seeing the JOURNAL, and it was therefore but yesterday that I became aware of a proposal for a memorial to my husband, Sir Victor Horsley, from the medical profession. I am very grateful for the thought which prompted the suggestion, and I cannot, of course, dictate to others as to their action in response to it. Yet I should be lacking in my duty to him if I failed to express on his behalf the strong feeling which I know would be his.

That there is no spontaneous or general desire in the profession is obvious, for my husband's death in Mesopotamia took place in 1916; nearly four years have passed since then. Without the support of such a strong general feeling such memorials seem to me not worthy of the effort to bring them into being; they lack conviction and sincerity and the underlying meaning which gives them all their value.

The times to-day are very hard for all of us, very hard for the medical profession, and above all for those scientific members of it who would be called upon to contribute, and who, from the multiplicity of such claims at this moment, must suffer serious inroads upon the altogether inadequate returns which the public and the State mete out to them in acknowledgement of their self-sacrifice in the cause of science.

I know, therefore, that it would give my husband no pleasure, but acute pain, if in any way through him the difficulties of the members of his profession were added to by one iota. I beg, Sir, to be allowed on his behalf to urge very earnestly that the work he did be suffered to remain his real and only public memorial.—I am, etc.,

London, W., March 14th. ELDRED HORSLEY.

SCOTTISH BOARD OF HEALTH.

THE Consultative Councils set up under the Scottish Board of Health Act have appointed the following Chairmen and Vice-Chairmen:

Medical and Allied Services.—Chairman: Sir Donald MacAlister, K.C.B., M.D. Vice-Chairman: Dr. Norman Walker.

National Health Insurance.—Chairman: Mr. William Thomson. Vice-Chairman: Mr. Thomas J. Addly.

Local Health Administration and General Health Questions.—Chairman: Sir Thomas Munro, K.B.E.

Highlands and Islands.—Chairman: Her Grace the Duchess of Atholl, D.B.E.

THE Ministry of Health has issued a standard specification for timber cottages. It can be obtained from the Stationery Office or through any bookseller, price 3d. net. The specification is to be adapted to local conditions by the architect, but every scheme for the construction of cottages in timber which has not yet gone to tender, or is not on the point of going to tender, must comply with this specification.

Obituary.

SIR ROBERT MORANT, K.C.B.,

First Secretary of the Ministry of Health.

THE death of Sir Robert Morant is a great loss to the country. These words are to be taken literally and not as a convention. He has been called a bureaucrat, but no man in public office ever was less. He was a man of wide sympathy, open to ideas, loving an enthusiast and ready to catch fire from him; but his business was to administer, and he was constantly impressed, often oppressed, by the difficulties of administration. The rebound from the first flush of comprehension of an idea to the realization of the obstacles in the way of its attainment was characteristic.

Robert Laurie Morant was born in Hampstead in 1863; from Winchester he went to New College, Oxford, and graduated B.A. in 1885. For the next quarter of a century he was concerned with education, first as a master at a preparatory school, then as private tutor to the Royal Family of Siam, and organizer of public education in that country, next with educational work in the east end of London, then in 1895 at the Board of Education, where the great ability he showed during the stormy times of the Education Act of 1902 led to his appointment to be Permanent Secretary to the Board in 1903. Thereafter began a gradual development of work and thought which finally brought Morant to have intimate concern with the affairs of the medical profession. To the reorganization of elementary education there succeeded investigation of the problems of secondary and of university education: both of immense consequence to the professions, the former perhaps to us the more important. After his translation to the chairmanship of the Insurance Commissioners—something, it may be, of a tumble upstairs—Morant retained to the full his zeal for education, and, without allowing his concern with the whole to be diminished, gave more and more attention to medical education and its continuance after graduation. He was greatly interested in the policy unfolded in the *Memorandum on Medical Education in England* presented to the Board of Education by Sir George Newman in 1918; the policy had been debated during his time at the Board of Education, and there is a passage in the *Memorandum* to which we have no doubt he heartily subscribed, for he was always an ardent advocate of width as well as depth in education. Sir George Newman, after speaking of the isolation too often to be observed between the various departments of a medical school, continued:

> Yet biology, physics and chemistry are together the foundation of the intermediate subjects and pathology, even as they, in their turn, are the essential preparation for clinical understanding and training. The student is not sufficiently taught that the advanced subjects *consist of* biology, physics and chemistry applied to the life, form and function of the body in health and disease. The patient *is* a case of anatomy, of physiology, and of pathology to be interpreted and treated on grounds and by means which are in essence chemical, physical and therapeutic. The examples of this truth are manifold. Physiology, as we have seen, must be brought into touch with the elements of clinical study—the physiology of the mammal and of man, its application in the clinical laboratory and the ward, and above all the recognition of the immense part played by the organic regulation of structure and activity, which the wise physician and surgeon seek not to destroy or pervert, but to release, to aid and to supplement at the bedside. Any lack of co-ordination of subject and of method, and still more of scientific spirit, is not peculiar or confined to the United Kingdom, but it is harmful and mischievous.

As head of the National Insurance Department Morant sometimes had to act as leading counsel in presenting the case against the profession. It is the highest compliment to both sides to be able to say that those members of the medical profession who were brought into contact with him during the negotiations formed the highest opinion of his integrity, and conceived a strong liking for him as a man. It was evident that he was always trying to understand the reasons for the attitude of the other side; when it came to a tussle he was a clean fighter.

Sir GEORGE NEWMAN, K.C.B., M.D., F.R.C.P., Chief Medical Officer, Ministry of Health and Board of Education, writes:

I find it very difficult to respond to the invitation to say a few words about Sir Robert Morant. His departure from amongst us has been so sudden and unexpected that some time must elapse before we are able to measure the magnitude of our loss, a loss which is not only personal but national; moreover, the moment of bereavement is not an occasion for considered judgements.

Morant and I began our friendship together in 1907, when Mr. McKenna first appointed me at the Board of Education. From that day to this the "combine"—or, as he sometimes preferred to call it, the "Siamese twin arrangement"—has lasted. For, though it is true that when he left the Board of Education I was no longer an official colleague, we saw much of each other, an association which became all the closer when we received official instructions in 1916 to begin to devise together the machinery of a Ministry of Health. As is well known, Sir Robert Morant was dreaming of a Ministry of Health as early as 1907. I am not transgressing any ministerial or official secrets if I say that in a particular measure and in a peculiar way the Ministry of Health, as now formed, is a product of Morant's mind, and his name will go down in our social history, not only in relation to the Education Act of 1902 and the administration of the Insurance Act since 1912, but also as the civil servant who above all others was the designer and builder of the Ministry of Health. To these great tasks he brought his exceptional natural faculties. Trained at Winchester and Oxford, with their inspiring traditions, he brought also a wide knowledge of men, and, above all, varied experience and human sympathy.

It has been said with much truth that Morant was a master of detail. I well remember when we were first designing the School Medical Service in 1907 how he drew a small cross in the middle of a sheet of foolscap, showing that the four arms of the cross were very close together and sprang from one centre. Then, with a stroke, he elongated each arm of the cross, showing that the final goal in each direction was pole-wide asunder from the others. To such a mind no detail is insignificant; it sees in the smallest particular far-reaching issues and in passing incidents and episodes illustrations of profound principles. Unless such a mind has a strong anchorage in principle, it will of course lose itself in a world of detail and triviality. This, however, was not Morant's habit. He was sometimes mysterious and sometimes inexplicable, sometimes provocative and apparently contrary, but he was never lost. Always for him there seemed to be, though unseen by others perhaps, a pillar of cloud by day and of fire by night.

Another characteristic closely related to his concentration upon detail was his tremendous power of analysis and destructive criticism. If he thought a proposition untenable, illogical, or in any way invalid, he could, with a quickness which was almost disconcerting, tear away the veil and ruthlessly expose what he considered to be the inherent fallacies of the argument. Indeed, one formed the opinion that his first great faculty was analytical, and so great was it that it overshadowed his constructive powers, in themselves of an exceptionally high order. The exercise of his analytical function often led him to appear to be suspicuous, hostile, and even aggressively antagonistic, when what he really sought was the truth, and nothing but the truth. Persons, policies, predilections, prejudices—they were all swept away in his almost terrible powers of quest. It must be added that in the pursuit he was wary and rather slow to give or receive confidence, distrustful until secure. "I am like the heavy and clumsy elephant," he wrote the other day, "when he is going over softish ground, with his trunk endlessly feeling and testing and fussing." It was sometimes an exhausting process to all concerned; and, like the rest of us, he had the defects of his qualities.

There was a third thing, too, which became obvious to all of us who ever worked under him or with him, and that was his extraordinary devotion to duty. He embodied what is said to be a distinguishing principle of the English civil service—incorruptibility. He could not be bought, and he was not for sale. He bent his whole powers of body, mind, and soul to what he deemed to be his personal duty in the public interest. I am glad to have an opportunity of saying that I think Morant, all through the thirteen years that I have known him, proved himself to be over and over again a great and true friend to English medicine. We used to tease him that he had chosen the wrong vocation, and that he ought to have been a prophet or a physician. Everything connected with

medicine seemed to fascinate him. Every great advance in its science and art seemed to thrill him, and he believed that the primary asset of the nation is the health of the people. He was called "democratic" and even "socialistic" in his ideals; however that may be, he loved to give these ideals a medical setting. More than once I have seen him opposite a group of medical men combating and analysing the views which they expressed, the temperature of the whole party steadily rising as the conflict of opinion progressed; and I have said to myself, "Yet he is really loving them all the time." Medicine has been coming rapidly into its own kingdom in relation to the State during the last few years, and it has been my lot to watch Sir Robert Morant's hand often guiding the helm. In the old days at the Board of Education, all through the war, and at the Ministry of Health, through good report and ill he has steered disinterestedly, what to him was the right course for the advancement of our profession, the amelioration of its disabilities, and the provision of the full opportunity for its splendid purposes. If it is true that in some ways he has been the greatest Civil Servant of his generation, it is likewise true that in some ways he has been the greatest friend which Medicine has ever had in the counsels of Government.

There is one other trait on which I must try to say one or two words. Although his work often brought him into clash with persons and policies and so left along the road a series of men hurt or provoked, Morant had something of a genius for friendship. There are men and women in various walks of life and in various countries of the world who cannot think of him other than as an extraordinarily true and affectionate friend. His love seemed sometimes to surpass the love of women; and whilst to the enemy he could be formidable, for his friends he was able and willing to do the uttermost in loyalty, in affection, and in service. This great gift of friendship sprang from deep spiritual sources, where lay hidden his religious convictions. It is not for me to speak of these though we had often discussed them together. They did not conform to any orthodox creed that I know of, and were perhaps rather a catholic harmony of East and West, but they proved a mighty dynamic in his life, the inspiration of his sense of public duty and the motive power of that exhaustless self-sacrifice in which he laid down his life. As a prodigious worker his life was one of ceaseless labour, day and night, often seven days a week, and he has certainly died in the cause of the Ministry of Health. We begged him to spare himself, to take some rest, to give heed to the premonitions of overstrain, but it was all apparently disregarded, or, at least, of no avail. He was so great a person, so large hearted and keen minded, that his very dominance made it difficult to control him or to harness him, and now he has fallen a martyr to his spirit of devotion. He passes from our midst, though not from our hearts.

Sir WALTER FLETCHER, K.B.E., F.R.S., Secretary of the Medical Research Committee, writes:

Medical research and higher education in medicine in this country will remain always under a debt to Sir Robert Morant that is quite incalculable. A great public servant in a position like his can wield a power which must usually be decisive, and which is all the greater for good or evil in that it is unseen from outside. To him is greatly due the establishment of the Medical Research Fund under the National Health Insurance scheme of 1911, its unification for the four nations of the kingdom, and the constitution of the Medical Research Committee set up in 1913 to administer it. By its provisions—novel in many ways, and far-sighted in all—this constitution gave the best freedom and power to the scientific men charged with the responsibility of applying the Fund to the purposes of medical research. At every opportunity Morant brought all his forces to the service of medical science and research. Inspired by the highest ideals of intellectual truth and of human charity, he gave to these causes all his genius for organization, an unrelenting vigil against the dangers that beset them, whether from ill will or from ill-directed goodwill, and he gave them unstinted work whenever occasion arose among the other claims upon his tireless official industry.

An administrator in his position and with his power, but with less insight into the essentially new problems of government offered by the direct State endowment of free scientific research work as such, might have strangled the new organization at its birth with the red tape of prescription. Morant responded instantly, however, to every right growth in the early life of the Committee towards freedom and flexibility, so long as the proper bonds of responsibility to Parliament and of financial efficiency were scrupulously preserved. More recently he laboured to secure on the right foundations the future work of the Committee, reconstituted as it will be from April 1st next as the Medical Research Council, working under the direction of a Ministerial Committee of the Privy Council. His interest in this plainly transcended any sectional views he might have taken if he had thought only as the chief officer of the Ministry of Health for England and Wales; he was concerned only with the realities of the problem and the best interests of the whole kingdom as those might be served by the advancement of medical science. He brought to this work—a fractional part only of the enormous tasks he bore at the time—not only the mind and experience of the professional administrator in education and in public health, but the warm-hearted zeal of a man keenly alive to the general interest and beauty of the scientific work being done in the universities or hospitals of the country.

His eager mind went out to all these things just as it responded to fine music, to literature, to good humour, and to all the fullness of life. It was, to my mind, his chief greatness that he had condemned himself for a long series of years to allow none of these to draw him aside from his intense application to official work. I have heard it said, even slightingly, that the *technique* of administration was his passion. That I am sure was not so. His passion, the deep but true furnace of his energy, was a desire that others, that the whole country, should be raised to a fuller life, to a more abundant life of the mind through education, and to a better physical life through health. The test of this was given, I think, in his attitude to the technical methods and details of administration, whether in design or execution. These lost all interest for him when once their purpose was fulfilled. He pursued realities, and in gaining or securing these he was not intrigued by the mental sleight or the deft adjustments that had made the advance. He fought step by step with clear vision of the great objectives ahead, and not with any but passing zest for the smaller enjoyments of the sword play as such. After work that any man might have cast backward eyes upon with complacent interest in the performance, he would be found to have turned instantly to the next task at hand. Few men gave praise more generously to others, and no man's praise was better worth having. Yet when he praised, it was the effectiveness of workmanship that appealed to him, and not the effort or skill that might be shown. The work itself belonged to the curse of Adam; the result was to be hailed as a step, though it might be a very tiny one, towards Paradise. The trouble taken was to be deplored, but—as he would say—"You see, it *was* worth while."

His work for the National Insurance scheme must be debated by others; it must always be a curious speculation whether the scheme could have survived a year without him. It seems to have in it every element of tragedy that a man with his eager impulsion towards ideals of public health and with his fine sense of right organization should have been called upon to administer a national health scheme of which the financial basis was prematurely, perhaps fatally, developed before a sound structure of health services had been framed at all. What other man could have made scaffolding to hold together those disjointed elements until, after successive and almost heart-breaking delays, the fusion of the insurance with the local government activities allowed the building to begin from the foundations upwards and from the centre outwards? It is true, I think, that his interest in the medical research organization within the insurance scheme was warmed not only by his true instinct for the value of knowledge and its advance, but by the comfort he could also take in seeing that this at least brought no dislocation in the administrative structure, and that research, while it could make independent growth without strain on other parts, could never progress too fast in accumulating guidance for the future medical administration.

Now the sword has fallen from him—the sword that he would never have let sleep in his hand till the English race had gained the possibilities of health and happiness he dreamed of—and it has fallen in the moment when

he had joined battle at last upon his own ground and in his own way. We cannot measure this loss. It can hardly yet be the subject of thought. "His departure is taken for misery, and his going from us to be utter destruction." Yet those who knew him for himself can only have an abiding thankfulness for him and for the knowledge of what he was. That can never fade and his work can never die.

Sir JENNER VERRALL writes:

On behalf of the Central Medical War Committee I wish to add a few words of gratitude and respect in memory of Sir Robert Morant. Working in and with the Committee, he gave us from the first the full support of his advice, experience, and influence, and brought to our aid the resources of his department. In the early days of our work especially, when responsibility came heavily on us, and the machine was still far from perfect, this help was of the greatest value. The efficiency of his department he had always most at heart, but Morant recognized that, to estimate fairly the minimum needs of the Insurance Act service, you had also to consider the general need of the community for medical attendance of all kinds and by all practitioners. It was largely due to the intimate relations with the medical profession which this work in common provided that in his new sphere at the Ministry of Health he showed his desire to ascertain, and if possible to meet, the wishes of the profession on the many problems to be solved. We have much reason to regret the loss of a strong man who sought to agree when he safely could do so, and, when he could not, withstood with such courage and so fairly.

Dr. H. B. BRACKENBURY, Chairman of the Insurance Acts Committee, writes:

The death of Sir Robert Morant is a blow to the whole community, and to the profession in its relation with the Ministry of Health a real disaster. His great qualities have been shown abundantly since the formation of that Ministry, but to those who, like myself, have been intimate with him in his official capacity ever since he became Permanent Secretary to the Board of Education in 1903 they have been evident for long; and his loss is a personal as well as an administrative one which is so great as to be at present unrealizable. Through all the discussions of the last two years between representatives of the profession and the Insurance Commissioners and Ministry, his has been the dominating figure. He may truly be said to have seen many of the difficulties of the profession, and to have sympathized with them more than some members of the profession itself. While holding very firmly to the principles which he had adopted as right, he always seemed to be trying to understand and to help those who were not so clear-minded. He was a man with a vision of what ought to be, yet with a practical mind fertile in thinking out means for making his visions into realities. He can have had few equals in his skill in probing uncertainties, and in detecting and exposing shams; and if the former process was sometimes painful and the latter on occasion merciless, they were both necessary and salutary. With great zeal and unsparing effort he was devoting himself to the upbuilding of a new and efficient health machinery and organization, and his death at this juncture leaves a gap which every member of the profession who has known anything of what he was and did must feel is almost impossible for any one man to fill. The public who care either for education or for health owe him an enormous debt; the medical profession owes him no less.

Sir JOHN LYNN-THOMAS (Cardiff, South Wales) writes:

The death of Sir Robert Morant is a calamity for the Ministry of Health from the administrative point of view. There is need and urgent call for a definite policy from the strictly medical point of view, irrespective of any other consideration. Medical ideals must be the bedrock upon which the superstructure shall be built; how long it will take to build is not the immediate concern of the medical profession, which must not give the critics a loophole for attack. The ideal of the best for efficiency must prevail in the long run. The bogey of £ s. d. need not frighten the profession; it concerns the millions who can afford to pay when they use hospitals. Hospitals are now paid for by the few who are not entitled to enter them in the day of sudden and serious illness or accident to the human machinery in all its component parts—mind, nerves, muscular and bony framework. In evolving a sound policy Morant's knowledge of affairs, his width of view, and his real sympathy with the aspirations of the profession would have been invaluable.

A memorial service held at the Church of St. Martin-in-the-Fields on March 17th was very largely attended. Among those present were Dr. Addison, Minister of Health, Sir George Newman, Chief Medical Officer of the Ministry, Sir Walter Fletcher, Secretary of the Medical Research Committee, Lord Dawson of Penn, Chairman of the Medical Consultative Council, Mr. Herbert Lewis (Parliamentary Secretary of the Board of Education), Sir L. A. Selby-Bigge (Permanent Secretary), and Sir Alfred T. Davies (Permanent Secretary of its Welsh Department), Viscount Sandhurst, Viscount Knutsford, Sir Francis Champneys, Sir Claud Schuster, Sir Almroth Wright, and Sir James Galloway. The British Medical Association was represented by Dr. T. W. H. Garstang, Chairman of Representative Meetings, Dr. G. E. Haslip, Treasurer, Dr. Brackenbury, Chairman of the Insurance Acts Committee, and the Medical Secretary, Dr. Alfred Cox, O.B.E. The BRITISH MEDICAL JOURNAL was represented by the Editor and Assistant Editor.

WILLIAM AUGUSTUS BONNEY, M.D.BRUX., F.R.C.S.ED., Chelsea.

WE regret to record the death of Dr. W. A. Bonney, who died on February 29th. He was born at Brentford in September, 1840, and was consequently in his 80th year. His grandfather was John Bonney, solicitor, of Brentford, who with Horne Tooke (for some time vicar of Brentford) was imprisoned at the end of the eighteenth century for taking part in the so-called Horne Tooke Conspiracy. It was a very mild agitation when compared with our proceedings in the present day; in fact, Tooke and his friends merely desired to deal with the rank political abuses which disgraced their time. The trial is memorable because Tooke and his friend were the last political prisoners to be lodged in the Tower of London. His father was Dr. Francis Augustus Burdett Bonney, who practised at Brentford.

Dr. W. A. Bonney, after serving an apprenticeship to Dr. Clark of Twickenham, went to the Middlesex Hospital in 1863, and became M.R.C.S. in 1866. He was subsequently appointed resident obstetric officer to the hospital. In 1867 he went as assistant to Dr. Keen of Chelsea, and in 1869 started in practice there. He had lived in Chelsea upwards of sixty years, and witnessed many changes.

He was a man of great ability, whose life interest was in his profession, and he kept himself abreast of modern professional thought and practice. In 1880 he took the diplomas of L.R.C.P. and L.M. of Edinburgh, and in 1882 the M.D. degree at Brussels; finally, in 1895, when he was 54 years old, he became, by examination, a Fellow of the Royal College of Surgeons at Edinburgh, studying for the diploma at the Middlesex Hospital, where one of his sons was at that time a student. He had that natural power of storing up and profiting by experience which is the fortunate possession of some, and which, when combined with professional ardour and honour, produces the finest type of medical man.

He was a man of strong opinions, but in fortune and misfortune alike was upright, honourable, and resolute. He had a tenor voice of rare beauty, and this gift remained with him, weakened but still beautiful, up to the time of his last illness, a very unusual thing.

He died of influenzal pneumonia, contracted in the course of his work, and he might have recovered had he given up directly he began to feel unwell. He had, however, an old patient he was determined to save, and on this account continued to struggle on until he himself was very ill. Thus he died, as he wished, in full harness, after a long and useful life—a fine record for any man.

He married in 1870 the daughter of Dr. Victor Poulain, and had three sons, two of whom are in the medical profession.

The death is reported of Sir T. ANDERSON STUART of Sydney. He was born at Dumfries in 1856, and received his medical education at the University of Edinburgh, where he graduated M.B., C.M. in 1880; he took the M.D. with the gold medal in 1882. He was president of the Royal Medical Society, Edinburgh, in 1882, and went to

Sydney in 1883 to assist in the foundation and planning of the medical school. In conjunction with Sir Alfred Roberts he threw himself heart and soul into the founding of the medical side of the university to make it worthy of the great nation which he foresaw would require its services. The result of his labours is a medical curriculum of the first order. On the retirement of Dr. Ashburton Thompson he threw his energies into the Public Health Department, and founded the offices and laboratories of the Board of Health there. His interest in public health matters continued, and he took a leading part in promoting the existing public health legislation of New South Wales. He also took part in the foundation of the Australian Institute of Tropical Medicine. He was Professor of Physiology in the University of Sydney, Dean of the Faculty of Medicine, and Fellow of the Senate since 1883; he was also chairman of the board of directors of the Royal Prince Alfred Hospital. He took great interest in the Industrial Blind Institution, of which he was president, in addition to being president of the Civil Ambulance Brigade, and the British Immigration League of Australia and other institutions. He organized the British Royal Society expedition to Funafuti, which bored coral reef, and proved the correctness of Darwin's theory of reef formation. He received the honour of knighthood in 1894.

Dr. ALEXANDER FERGUSON, professor of pathology in the School of Medicine, Cairo, since 1905, died on February 21st, after a long illness. He graduated M.B., C.M.Glasg. in 1892, and was afterwards for several years assistant to the Professor of Pathology in Glasgow, assistant pathologist to the Western Infirmary, and pathologist to the Hospital for Sick Children. In 1902 he graduated M.D. with honours, and received the Bellahouston gold medal for his thesis. During the war he was consulting bacteriologist to the troops in Egypt, with the rank of Major R.A.M.C. He took a particular interest in the pathological museum of Cairo, of which he published a descriptive catalogue in 1910.

The Services.

AFGHANISTAN DISPATCH.

IN his dispatch of November 1st, 1919, giving an account of the recent operations against Afghanistan, General Sir C. C. Monro makes several references to the Medical Services. The number of Regular R.A.M.C. and I.M.S. officers available in India was short of his requirements for complete mobilization:

The source of recruitment of these categories in India is small, and it had been found impossible to make good the deficiency from home. I was fortunate, however, in obtaining the services of 107 officers and 1,280 other ranks of the R.A.M.C. who happened to be in India *en route* from Mesopotamia to the United Kingdom.

The number of mobilized medical units employed during the campaign included 29 field ambulances, 12 casualty clearing stations, 15 sanitary sections, and 16,000 beds in general hospitals, with convalescent camp accommodation for 4,200. There were 11 ambulance trains, and a hundred specially fitted railway ambulance coaches for use with the ordinary passenger service. The Commander-in-Chief records that the two outstanding features of the campaign from the medical point of view were, first, an outbreak of cholera of unusual severity; and, secondly, the abnormal climatic conditions under which the troops were called upon to operate. The epidemic of cholera "for a time gave rise to grave anxiety; it was successfully stamped out by June 20th, an achievement for which the Medical Service deserves the greatest credit." Shortly after the outbreak of hostilities a heat wave of remarkable severity occurred over the whole of the Punjab and North-West Frontier Province, the daily temperature at Peshawar in May, June, and July being 5° to 7° F. above the daily average of the past twenty years. In spite of these trying conditions the incidence of sickness is described as not excessive. The daily admission rate was British 4.98, and Indian 2.97, in the period from May 5th to August 9th. This is compared with admission rates in Mesopotamia, which in 1917 were 5.04 and 2.11 respectively, and in 1918 3.48 and 2.27. The total forces, British and Indian, employed at this time seems to have numbered about 190,000. At a later period the strength of the force employed on the other side of the Indus amounted to 340,000 men. Notwithstanding the severe hardships imposed upon the troops, the Commander-in-Chief from personal inspection assures the Government of India that everything possible was done with the means at his disposal to alleviate the discomfort of the troops, and he records his high appreciation of the work of the administrative services and departments which contributed so largely to that end.

HONOURS.

K.B.E.

THE knighthood of the Order of the British Empire has been conferred on temporary and honorary Major Auguste Charles Valadier, C.M.G., Special List, in recognition of valuable services rendered in connexion with military operations in France and Flanders. Major Valadier contributed jointly a note on advances in the surgery of the jaw and face to the BRITISH MEDICAL JOURNAL of July 7th, 1917.

Universities and Colleges.

UNIVERSITY OF CAMBRIDGE.

AT a congregation held on March 12th the following medical degrees were conferred:

M.D.—R. R. Armitage, C. R. A. Thacker, H. A. Douglas.
M.B., B.CH.—F. D. Marsh, F. H. Young.

UNIVERSITY OF LONDON.

A MEETING of the Senate was held on February 25th.

A letter was read from Lord Stamfordham intimating the King's approval of the suggestion that in future at dinners and other functions of the University of London His Majesty's health should be proposed as "Our Most Illustrious Doctor, His Majesty the King." The King when Prince of Wales accepted the honorary degree of Doctor of Laws of the University in 1903.

The following were recognized as teachers of the University in the subjects and at the medical schools indicated:—St. George's Hospital: Mr. Donald W. Roy (Midwifery and Diseases of Women). University College Hospital: Mr. T. W. P. Lawrence (Pathology). St. Mary's Hospital: Dr. W. S. Denham (Chemistry), Dr. A. H. Gosse (Clinical Medicine), Mr. K. A. Lees (Aural Surgery and Laryngology). Royal London Ophthalmic Hospital: Dr. G. M. Holmes (Ophthalmology-Medical).

The title of professor in the subjects indicated has been conferred upon the following teachers of the university:—St. Thomas's Hospital Medical School: Dr. Hugh MacLean (Biochemistry), Dr. J. Mellanby (Physiology). Middlesex Hospital Medical School: Dr. T. Yeates (Anatomy). London School of Tropical Medicine: Mr. A. W. Alcock (Medical Zoology).

It was reported that Dr. T. Lewis, to whom the Mickle Fellowship (value £200) was awarded for 1920, had intimated his intention of presenting half the money to the Graham Research Fund and half to the Cardiographic Laboratory at the University College Hospital Medical School. The chairman of the Graham Legacy Committee had communicated the thanks of that committee to Dr. Lewis.

In accordance with a request from the council of the Central Association for the Care of the Mentally Defective it was resolved to organize a course of lectures on mental deficiency for medical officers to local authorities and institutions and medical men engaged in work for defectives.

Presentation day will be held in the Royal Albert Hall on Wednesday, May 19th.

The University Medal in Branch IV (Midwifery and Diseases of Women) of the M.D. examination, July, 1919, has been awarded to M. H. Oldershaw, B.S., of University College Hospital.

UNIVERSITY OF ABERDEEN.

MR. WILLIAM G. CRAIB has been appointed Regius Professor of Botany in the room of the late Professor Trail. Professor Craib, who is M.A. Aberdeen, was for a time temporary superintendent of the Botanic Gardens in Calcutta, and was afterwards assistant at the Royal Gardens, Kew. He was appointed lecturer on forest botany and Indian forest trees at Edinburgh five years ago.

UNIVERSITY OF DUBLIN.

Honorary Degrees.

THE Senate on March 13th decided to confer a number of honorary degrees. Among them are the M.D. on Sir Archibald Garrod, K.C.M.G., M.D., F.R.S., Regius Professor of Medicine in the University of Oxford; the LL.D. on Sir Donald MacAlister, K.C.B., M.D., President of the General Medical Council, and Principal of the University of Glasgow; and the D.Sc. on Professor W. H. Bragg, F.R.S., whose investigations into radio-active elements have made his name so well known.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH.

THE diploma L.R.C.S.Edin. has been granted to S. K. Mukhopadhaya.

ROYAL COLLEGES OF PHYSICIANS AND SURGEONS, IRELAND.

THE following candidates have passed the Conjoint examination for the diploma in Public Health:

Mabel C. Clark, W. E. Cooke, W. P. Cooney, C. E. H. Gater, J. A. Hamilton, W. P. Kelly, T. J. Lydon, J. F. Lyons, B. Murphy, W. O'Brien, G. W. Pope.

Medical News.

THE Prince of Wales, before his departure for Australia, signified his willingness to support the Oxford memorial to Sir William Osler, and sent a donation.

THE date for the receipt of signatures to the Automobile Association's petition to the Prime Minister on the cost of motor fuel has been extended to March 24th.

A DISCUSSION on the prevention and extermination of rats will be opened by Mr. T. J. Kenny, M.R.C.V.S., at a meeting of the Royal Sanitary Institute to be held in the Town Hall, St. Helens, on Friday, March 26th, at 7 p.m.

THE number of deaths from influenza in the ninety-six great towns of England and Wales during the weeks ending February 7th to March 13th inclusive have been 98, 109, 161, 178, 196, and 230. The number of deaths in London during the same period were 20, 25, 37, 38, 54, and 57.

THE Umberto I prize for the best orthopaedic work or invention is open to members of the medical profession in any country. Persons desiring to compete for the prize, which is of the value of 3,500 lire, should apply to the president of the Istituto Ortopedico Rizzoli, Bologna, Italy, who will supply full particulars. The competition will close on the last day of this year.

THE first reunion dinner of officers and nursing staff of No. 53 General Hospital (B.E.F.) will take place on March 25th, at the Hotel Great Central, at 7.30 for 7.45 p.m. Officers who have not already done so, and who wish to be present, should at once communicate with Lieut.-Colonel E. M. Callender, C.B.E., 73, Sussex Gardens, London, W.2; nurses with Miss M. S. Riddell, Principal Matron, T.F.N.S., 80, Pall Mall, S.W.1.

DR. NATHAN RAW, C.M.G., M.D., M.P., has been invited by the Minister of Health to assist him in the selection and organization of permanent village settlements for the treatment and training of persons suffering from tuberculosis. The Ministry proposes to provide nine settlements in Great Britain for tuberculous ex-soldiers and others.

THE Minister of Health has appointed an inter-departmental committee to consider the determination of a standard composition for condensed milk and other questions connected therewith. All communications on the subject should be addressed to the secretary, Mr. C. J. Bayley, Ministry of Health, Whitehall, S.W.1.

THE programme of the Child-Study Society, London, for the current year includes a lecture on March 25th, on adolescence and the continuation schools, by Mrs. Sloan Chesser, M.D., with Dr. F. C. Shrubsall in the chair; and a lecture on April 29th, on biting insects and children (illustrated with lantern slides), by Dr. A. E. Shipley, F.R.S., with the Hon. Sir John Cockburn, K.C.M.G., M.D., in the chair. The lectures are given at 6 p.m., at the Royal Sanitary Institute, 90, Buckingham Palace Road, S.W.1.

THE Ministry of Pensions for some time past has supplied soldiers and pensioners who have suffered amputation of the leg with a provisional limb to supplement the permanent mechanical limbs that have been, and are being, supplied. The value of the provisional limb lies in its acting as a kind of "slipper" and as a reserve in case of accident to the mechanical limb. If a pensioner has not received a second mechanical limb he is entitled to apply to his local War Pensions Committee for a provisional limb, and arrangements to obtain one will be made with the nearest limb fitting hospital which works in connexion with a Red Cross provisional limbs dépôt established in its neighbourhood.

THE fourteenth French Medical Congress will he held in Brussels under the patronage of the King and Queen of Belgium from May 19th to 22nd. Three subjects have been selected for discussion: (1) Syphilis of the cardiovascular system, introduced by MM. Bayet (Brussels), Etienne and Spillmann (Nancy), Vaquez et Laubry (Paris). (2) Lipoid pathology, introduced by MM. Chauffard, Guy Laroche and Grigaut (Paris), Linossier (Vichy), Zunz (Brussels). (3) The value of artificial pneumothorax in treatment, introduced by MM. Burnand (Leysin), Derscheid and Geeraerd (Brussels), Dumarest (Hauteville), Küss (Angicourt). The congress is organized by the Association des Médecins de Langue Française; others desiring to attend the congress will pay a subscription of 40 francs (Belgian). The secretary of the congress, from whom further particulars can be obtained, is Professor René Verhoogen, 22, Rue Joseph II, Brussels. The treasurer is Dr. Godart-Danhieux, rue Montoyer, 9a, Brussels.

THE committee of the Lancaster Gate Medical Society decided, on March 1st, that the society in future should be known as the Psycho-Neurological Society, and that its object be "the study of psychological and neurological medicine." The officers for the year are: President, Dr. David Forsyth; Vice-President, Dr. W. A. Brend; Honorary Secretary, Dr. C. Worster-Drought; Honorary Treasurer, Dr. P. Bousfield. At a meeting on February 22nd Dr. Henry Head read the paper published in our issue this week, and a discussion followed. On March 15th Dr. R. Travers Smith raised a discussion on the simulation of valvular disease of the heart, and subsequent speakers deplored the fact that the psychological basis of cases of disordered action of the heart was so frequently overlooked.

THE National Association for the Prevention of Tuberculosis has issued an appeal for subscriptions to a fund to enable it to maintain and extend its educational work. Among the methods it employs is the organization of exhibitions at which are shown diagrams, models, and pictures illustrating the cause and prevention of tuberculosis. Lectures, illustrated with lantern slides and cinematograph films, are arranged, and caravans tour the country; in this way the association's organizers have visited every county and many county boroughs in England since peace was declared. The association is at present supplementing its main work, which is educational, by organizing a farm colony for discharged tuberculous soldiers and sailors. As evidence of the need for educational work it is pointed out that there was an increase throughout the country in the death rate from tuberculosis during the war; in 1917 deaths from tuberculosis in England and Wales numbered 55,934, and it is computed that the number suffering from the disease must amount to half a million. The increase is attributed not only to the hardships of living under war conditions, but to the impossibility of putting a sufficient preventive force into the field. The King is president of the association, the Chairman of Council is Sir Arthur Stanley, and the vice-chairman Sir Robert W. Philip of Edinburgh. The offices of the association are at 20, Hanover Square, London, W.1.

THE annual meeting of the Mental After-Care Association was held on March 10th at the Clothworkers' Hall, E.C., under the presidency of the Master of the Company, Mr. Walter Mews, who emphasized the importance of the task of finding suitable work for poor persons convalescent or recovered after treatment in institutions for the insane. The report, read by Dr. Percy Smith, showed a considerable increase in the number of persons assisted during the year; 1,074 had been guests for longer or shorter periods in the Association's Cottage Homes, where efforts were made to provide those capable of employment with situations within their scope under sympathetic employers; in many cases it was necessary to extend, sometimes for years, kindly supervision and advice with a view of preventing relapse. Unfortunately the balance-sheet showed some falling off in subscriptions, but the Guilds of Help had increased its contributions, so that the total amount raised in 1919 was £2,188 as compared with £2,276 in the preceding year. The working expenses had necessarily been affected by the general rise in prices, so that there was urgent need for increased support. Official recognition of the effective work of the association had been accorded both by the Board of Control and the London County Council Asylums Committee, with a prospect of monetary grants from special funds they administered. In moving the adoption of the report, Sir Marriott Cooke, K.B.E., vice-chairman of the Board of Control, testified, from official experience, to the excellent work accomplished by the association in the rehabilitation of discharged patients. Sir George Makins, G.C.M.G., President Royal College of Surgeons of England, in seconding, spoke of the desirability of judicious after-care in convalescence after physical disease, and emphasized its absolute necessity in the case of those who had suffered from mental disorders. Other speakers were Sir G. Wyatt Truscott, Bt., Sir Charles Wakefield, Bt., Sir George Savage, Sir R. Armstrong-Jones, and Mr. C. Gabain. Special reference was made to the invaluable and tactful work of the secretary, Miss E. D. Vickers, who is always glad to supply information as to the association from its offices, Church House, Dean's Yard, Westminster, S.W.1.

Letters, Notes, and Answers.

ORIGINAL ARTICLES and LETTERS *forwarded for publication are understood to be offered to the* BRITISH MEDICAL JOURNAL *alone unless the contrary be stated.*

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

IN order to avoid delay, it is particularly requested that ALL letters on the editorial business of the JOURNAL be addressed to the Editor at the Office of the JOURNAL.

THE postal address of the BRITISH MEDICAL ASSOCIATION and BRITISH MEDICAL JOURNAL is 429, Strand, London, W.C.2. The telegraphic addresses are:

1. EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology, Westrand, London*; telephone, 2631, Gerrard.
2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate, Westrand, London*; telephone, 2630, Gerrard.
3. MEDICAL SECRETARY, *Medisecra, Westrand, London*; telephone, 2634, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin, and of the Scottish Office, 6, Rutland Square, Edinburgh.

QUERIES AND ANSWERS.

DR. GWILYM R. PENNANT, of Leargaidh, Brithdir, Glamorgan, who has recently had under his care two cases of miners' nystagmus which developed double glaucoma, asks colliery surgeons to let him know whether they have had a similar experience.

INCOME TAX.

"C. P." states his probable income, exclusive of civil earnings, "for the financial year ending April, 1921," and inquires as to the appropriate personal and professional allowances.

*** Assuming that the net income from the new work does not bring our correspondent's total income over the limit of £800, and that the present statutory rules remain in force for the year 1920–21, he would be entitled to regard the whole of his income as earned except that arising from the War Loan investments; to £50 allowance for his wife, and £65 for his two children; the earned rate of tax would be 3s. and the unearned 3s. 9d. in the £. With regard to the professional expenses, the rule is that they can be allowed in so far as they are incurred in carrying on the practice and not (*a*) in setting it up, or (*b*) in the ordinary way of private living. Applying this to the specific cases mentioned, "C. P." could deduct a reasonable proportion of the furnished rent—for example, 1½ guineas a week, cost of one servant's board and wages, cost of drugs, cost of running but not of purchasing motor car and bicycle. When either the car or cycle is sold, the cost of its replacement would be deducted, but the original car represents capital outlay in starting the practice.

INSOMNIA AGGRAVATED BY NOISE.

"G." asks to hear of a method of obstructing the auditory meatus in a case of insomnia aggravated by noises.

*** Dr. Dundas Grant informs us that though various forms of sound deadeners were used during the war with a view of diminishing the concussion without interfering with the hearing of orders, in civil life there is probably nothing better than a properly adjusted plug of cotton-wool, which may be lightly smeared with toilet lanoline or with spermaceti ointment. A pad of cotton-wool, fastened on with a light bandage, might be tried in the first instance.

LETTERS, NOTES, ETC.

CHAMELEON INFLUENZA.

DR. D. W. SAMWAYS writes from Mentone (March 7th) as follows: The variety of forms in which influenza may present itself has been well illustrated lately on the Riviera. The earlier cases in February were fairly normal, with frontal headache, moderate fever, pains, and rapid recovery. These were followed by a series in which nasal catarrh and sneezing were the predominant and most troublesome features. Then came a series with little fever, 0.5° to 1°, which resisted treatment of any sort for some days. With these there was great prostration, and, above all, inordinate depression. Finally, the tendency has been to concentrate on the digestive system, with abdominal pains, loss of all appetite, nausea, and a sickly slate-coloured tongue. I do not know whether in England similar kaleidoscopic changes have been taking place, nor have I previously observed such rapid transformations here.

SUBCUTANEOUS INJECTIONS OF CAMPHOR OIL.

IN extension of a reply on this subject published last week (p. 388) Messrs. Parke, Davis and Company (Beak Street, London, W.1) ask us to state that they supply camphor dissolved in oil. The oil is sterilized and supplied in ampoules in two sizes. In the one 0.2 gram (3 grains) of camphor is contained in 1 c.cm. (17 minims), in the other 2.33 grams (36 grains) in 10 c.cm. (169 minims).

THYROID ADMINISTRATION IN HIBERNATING DORMICE.

DR. A. BERNHARD-SMITH (London, S.W.) writes: It may be of interest to place on record the effect of feeding thyroid extract to a pair of dormice (*Muscardinus avellanarius*) towards the end of the hibernating season. The amount ingested was 15 grains (Burroughs and Wellcome) over the space of six days. There were no symptoms after the first dose of 5 grains. I then withheld other food for twenty-four hours, and after the second dose a condition somewhat resembling normal torpidity was induced. The respiration became shallow, and the characteristic attitude appeared, but without rigidity. Indeed, after the third dose (although they have habitually become rigid during these cold nights), the new condition induced by the thyroid was such that the male on being given food rapidly recovered and, his appetite being now satisfied, conveyed a morsel to his helpmate, who was thereby awakened from her comatose state, and soon assisted in the consumption of a two-ounce carrot. Movements were somewhat sluggish for a few hours afterwards, but the pair are now none the worse for their experience.

CUTANEOUS MANIFESTATIONS IN A CASE OF CERVICAL FISTULA.

DR. MARTIN J. CHEVERS (Withington, Manchester) writes: The article appearing under this heading by Dr. Alfred Eddowes in the JOURNAL of March 6th, in which he states that he has passed the patient on to a surgeon's care, prompts me to call attention to an article by me in the BRITISH MEDICAL JOURNAL of April 28th, 1906, p. 974, entitled "The treatment of branchial fistula"; the treatment adopted was galvanism and the lady so treated—a relative of my own—has ever since remained perfectly cured and without the slightest trace of the fistula or mark in its course, except the slightest dimple the size of a pin head just above the clavicle. This tends to show that the use of the knife is not always necessary in such a case.

A PIN IN THE ALIMENTARY CANAL.

DR. A. B. ROBERTS (Shepherd's Bush) writes: The case mentioned by Dr. H. B. Pope (February 14th, p. 242) reminds me that about three years before the war a young man about 22 years old, a dancing and deportment teacher, came to me suffering from spasmodic pain and discomfort referred to the anus, especially during evacuation of the bowels. These symptoms had been present about three days. On examination with the rectal speculum a blackened, rusty pin was easily removed by long artery forceps. The patient's only explanation was that he had swallowed the pin without knowing it at the time. As the pin was somewhat bent it lodged near the inner sphincter.

VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 44, 45, 48, 49, 50, 51, 52 and 53 of our advertisement columns, and advertisements as to partnerships, assistantships, and locum tenencies at pages 46, 47, and 48.

THE following vacant appointments of certifying factory surgeons are announced: Castle Acre (Norfolk), Consett (Durham).

THE post of specialist medical referee under the Workmen's Compensation Act, 1906, for ophthalmic cases in County Court Circuits Nos. 12 and 14, is vacant. Applications to the Private Secretary, Home Office, by April 3rd.

SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

THE charges for advertisements in the BRITISH MEDICAL JOURNAL will be increased at the end of March. The new charges will apply to all advertisements for insertion in the JOURNAL of April 3rd and subsequently. The rates will be as follows:

Six lines and under	7s. 6d.
Each additional line	1s. 3d.
Whole single column	£6 0s. 0d.
Whole page	£16 0s. 0d.

An average line contains six words.

From the issue of April 3rd the charge for announcements of births, marriages, and deaths will at the same time be increased to 7s. 6d.

Present Scale.

	£ s. d.
Seven lines and under	0 6 0
Each additional line	0 0 9
Whole single column	4 0 0
Whole page	12 0 0

All remittances by Post Office Orders must be made payable to the British Medical Association at the General Post Office, London. No responsibility will be accepted for any such remittance not so safeguarded.

Advertisements should be delivered, addressed to the Manager, 429, Strand, London, not later than the first post on Wednesday morning preceding publication, and, if not paid for at the time, should be accompanied by a reference.

NOTE.—It is against the rules of the Post Office to receive *poste restante* letters addressed either in initials or numbers.